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SOME NEWER OBSERVATIONS ON THE PHARMACOLOGY OF EMETINE

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The senior author, in previous communications (Chopra and Ghosh, 1922; Chopra, Ghosh and De, 1924), recorded observations on the pharmacology, toxicology and therapeutics of emetine. The present work was undertaken with a view to revise our knowledge or support the findings of the previous workers. With this object in view further studies on the effects of emetine on the cardiovascular system, intestine, uterus and the vomiting centre as well as observation on the lethal dose of the drug in animals have been undertaken.

Experimental Procedure

Animals used: Cats anæsthetised or spinal preparations (for all *in situ* experiments); Rabbits (isolated heart and intestine); Guineapigs (isolated uterus and intestine); Frogs (heart and perfusion of vessels); Pigeons (vomiting centre):

Anæsthesia: Mixture of 1 part of chloroform and 4 parts of ether for preliminary narcosis; maintained by administration of 1 per cent chloralose in normal saline solution intravenously, 5 to 10 c.c. per Kg. Frogs were pithed and the spinal cord destroyed. Rabbits and guineapigs were killed by a blow on the neck and the organs removed for isolated experiments.

Spinal animals (cat) were made by Elliot's method quoted by Burn (1937). The anæsthesia employed was the above mixture instead of chloroform only.

Vagotomy was performed at the neck near the bifurcation of the common carotid artery. In all instances the *carotid blood pressure* was recorded with a float from the mercurial manometer connected to the artery. The *anticoagulant* used was 5 per cent sodium citrate solution.

Volume changes of the *spleen, limb* and *intestine* (segments of intestine about 4 inches) were recorded by metal, glass and ebonite plethysmographs respectively, attached to recording tambours.

Frog's heart was perfused with Ringer's saline (NaCl, 0·65%; KCl, 0·014%; $CaCl_2$, 0·012%; $NaHCO_3$, 0·02%; glass distilled water to quantity) containing the drug in suitable proportions through a cannula introduced into the sinus and the contractions of the exposed heart were recorded by the suspension method.

For the isolated mammalian heart the Gunn's perfusion apparatus was employed and the perfusing fluid used was that recommended by Locke; NaCl, 0·92%; KCl, 0·042%; $CaCl_2$, 0·012%; $NaHCO_3$, 0·015%; Glucose 0·1%; water to quantity) properly oxygenated, to which quantities of defibrinated blood of the animal were added.

The contractions of the *cat's heart in situ* (anæsthetised and spinal) were recorded by attaching, threads to the auricle

(auricular) and ventricle (apex) connected to 'fixit' levers by the intervention of pulleys, the exposed heart being kept moist by intermittent drops of physiological saline from a burette suitably arranged—artificial respiration being given through the tracheal tube connected to the respiratory pump fitted with both inlet and outlet device.

The technique of *perfusion of frog's vessels* was that of Lacwen-Trendelenburg (Sollmann, 1928).

The two unit isolated organ bath (100 c.c. capacity) with glass sides and arrangement for maintaining constant temperature were employed for experiments with strips of intestine and uterus, oxygenated Sollmann and Redemeaker's solution (NaCl, 0·09%; KCl, 0·042%, $CaCl_2$, 0·012%; $NaHCO_3$, 0·03%; Glucose 0·1%; Water to quantity) being employed throughout.

The *movements of the intestine* were recorded *in situ* by means of Jackson's enterograph, connected to "fixit" levers with the interposition of pulleys.

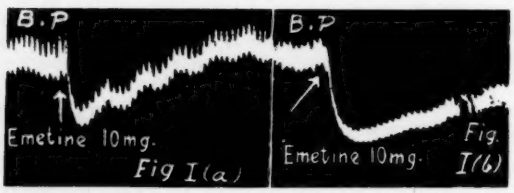
In case of the pigeons, the wing veins were exposed by removing the feathers and after cleaning with ether, the drug was injected intravenously by means of the tuberculin syringe.

All records were taken on Brodie-Sterling kymograph. The drugs were injected into the rubber tubing attached to cannula connected to the femoral vein.

Emetine hydrochloride in normal saline solution was employed throughout.

Experimental Findings

1. *Cardiovascular system*—With the administration of a dose of 0·15 mg./Kg. the blood pressure invariably fell returning to the original level after varying intervals depending on the dose. With increasing dosage, the fall was proportionately greater, and the recovery time was correspondingly lengthened (in fact, when the dose exceeded the limit of 0·5 mg./Kg., the recovery was never complete). A repetition of the same dose, even sometime after the return of the pressure to its original level resulted in a comparatively greater fall [Fig. I(*a*) and Fig. I(*b*)]. These effects were unaffected by double vagotomy. In spinal animals, on the other hand, a relatively larger dose was necessary to obtain an equivalent fall in pressure when compared to that observed in anæsthetised ones.



Figs. I (*a*) & I (*b*)—Record of blood pressure. Effect of two consecutive doses of emetine 10 mg. each. *Note* after the second dose (*b*), a greater fall which is more sustained than that after the first (*a*); the pressure does not return to normal after the second dose.

Observations in volume changes in intestinal loops or spleen recorded an increase which occurred simultaneously with the fall in blood pressure but the rise in volume persisted longer (Fig. II). An increase in the limb volume also was obtained under similar circumstances but the rise, in contrast to that of the splanchnic organs, always followed the fall in pressure. The same 'lag' in recovery, however, was evident here too (Fig. III).

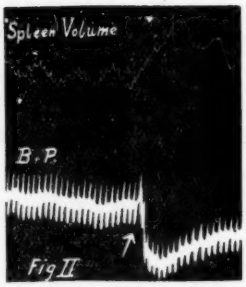


Fig. II—Record of blood pressure (lower) and spleen volume (upper). Effect of 5 mg. emetine injected I.V. *Note* simultaneous fall in B.P. and rise in spleen volume.

No significant effect was observed on the vessels of the frog with a concentration of 1 in 100,000.

In the majority of experiments, the heart showed a tendency to weakness, slowing and irregularity. With continuous perfusion in concentrations of 1 in 500,000 to 1 in 250,000, the frog's heart showed signs of depression associated with slowing within two minutes, the ventricles being affected earlier than the auricles. Later, irregularity in the form of missed beats appeared. However, the heart continued to beat for a long time, generally an hour, when the stronger solution was used and a little over two hours with the dilute solution, before being finally arrested in diastole.

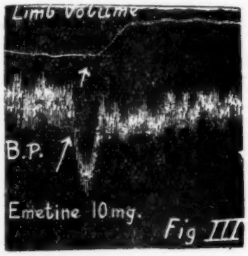


Fig. III—Record of blood pressure (lower) and limb volume (upper). Effect of 10 mg. emetine injected I.V. *Note* immediate fall of B.P. and a subsequent rise in limb volume which does not return to normal even when B.P. reaches nearly the previous level.

With isolated rabbit heart, when the drug (in doses of 0·01 mg to 0·1 mg.) was injected a little above the heart, the same effects on cardiac contractions, rate and rhythm were observed, the intensity of the action varying with the dose (Fig. IV). The effect, however, was transient. With larger doses (0·25 mg.), the depression and irregularity became much more pronounced without any evidence of complete recovery. Previous administration of atropine had no influence on the above effects. Continuous perfusion with Locke's solution containing the drug showed that a concentration of 1 in 250,000 caused stoppage of the heart within 8 minutes. A concentration of 1 in 500,000 on the other hand,

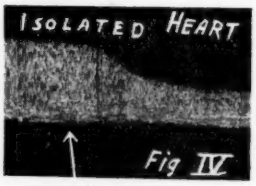


Fig. IV—Record of contractions of the isolated rabbit's heart (systole—upstrokes). At arrow mark 0·025 mg. emetine was introduced into the perfusion fluid. *Note* depression of the heart.

depressed and slowed the heart but the complete cessation of the contractions did not occur till after 25 minutes.

The contractions of the cat's heart *in situ* became weaker and slower immediately on the introduction of the drug into the vein, the auricles almost always being more affected than the ventricles (Fig. V). As observed in the isolated rabbit heart and frog heart the extent of depression was proportional to the dose. Spontaneous recovery to the original condition was always evident as long as the dose was not exceptionally large (10 mg./Kg.). Further, a second injection of the original dose produced a relatively greater depression—a fact observed with blood pressure as well, possibly a phenomenon opposite of "tachyphylaxis", as observed in the case of pressor amines.

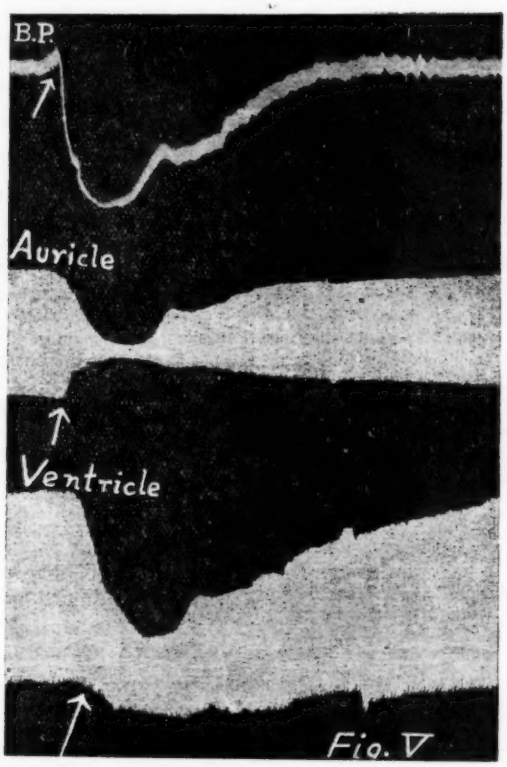


FIG. V—Record of blood pressure, auricular and ventricular contractions (systole—upstrokes). Effect of 10 mg. emetine injected I.V. *Note* depression of the heart along with the fall of B.P., the auricle more depressed than the ventricle.

2. *Intestine*—In intact anæsthetised cats, small doses which have no effect on blood pressure produced an increase in the amplitude of the contractions of the intestine (Fig. VI). In larger doses, *i.e.*, in doses which caused a fall in pressure, intestinal movements were apparently not much affected.

With isolated strips of intestine (rabbit and guineapig), a concentration of 1 in 250,000 did not produce any demonstrable change, whereas a higher concentration (1 in 125,000) caused sight depression of the movements (Fig. VII). These concentrations may be regarded as those found in blood in man after 1 grain of the drug, assuming that the whole of the drug is in solution.

3. *Uterus*—Observations on isolated uterus of both pregnant and nonpregnant guineapigs demonstrated that the drug was without any effect on that organ in dilutions which may be obtained in the human patient after administration of the therapeutic dose of the drug (¼ to 1 gr.).

4. *Vomiting Centre*—Emetine is an irritant and as such

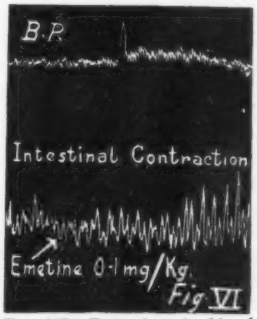


FIG. VI—Record of blood pressure (upper) and intestinal movements (lower). Effect of 0·1 mg./Kg. emetine injected I.V. *Note* B.P. unaffected, intestinal movements stimulated.

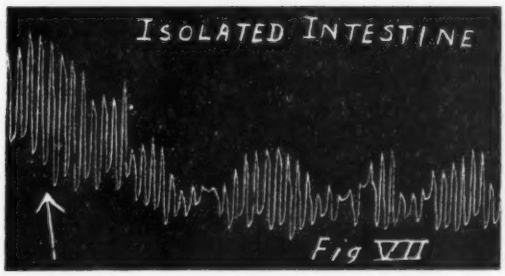


FIG. VII—Record of movements of isolated intestinal strip (rabbit) in bath (100 c.c.). At the arrow mark 0·8 c.c. of 0·1 per cent solution of emetine was added in the bath (concentration 1 in 125,000). *Note* depression of intestinal movements and also of tone.

acts as an emetic when administered by the mouth. After parenteral medication, the drug sometimes produces vomiting. Whether it has any direct action on the centre is still debated. The effect of the drug on the vomiting centre was studied by injecting the drug in varying amounts in a series of pigeons kept in the laboratory varying in weights from 230 to 270 grams. Doses ranging from 0·03 to 0·6 mg. per 100 G. failed to produce any emesis or emetic movements even after two hours.

5. *Fatal dose*—This was studied in anæsthetised cats by continuous infusion of physiological saline containing the drug in varying concentrations. The fall of the blood pressure to zero was taken as the end point of the observation. The fatal dose varied with the concentration of the drug used. A smaller dose was necessary with a stronger concentration. Thus while 6 mg./Kg. was fatal with a solution containing 2 mg./c.c., 25 mg./Kg. was necessary with a strength of 0·5 mg./c.c.

DISCUSSION

The depression of the heart and the fall of blood pressure after emetine have been observed by different workers (Maurel,

1914; Pick and Wasicky, 1916; Plumier and Clermont, 1919; Chopra and Ghosh, 1922; Epstein, 1932; and others) and various explanations have been offered. Central paralysis, direct myocardial degeneration or primary vascular paralysis are some of the arguments advanced for the fall in the blood pressure. The diminished adrenaline content observed by different workers has also been correlated with the phenomenon of circulatory depression and its possible indirect influence indicated (Tournade *et al.* 1935; Chopra *et al.* 1935). Our observation may be summarised as follows:—

The cardiac depression is a direct action of emetine on the heart since this effect was unaffected by previous vagotomy or atropinisation. The parallelism that has been found to exist between the degree of depression of the heart and the extent of fall in pressure and the correspondence shown in their tendency to regain the original condition (under different doses) would appear to indicate that the cause of fall in pressure was due to depressant action of the drug on the heart. The increase in volume of the splanchnic organs as well as that of the limb would suggest a widespread vasodilatation leading to stagnation, and this fact may reasonably be put forward as an important contributory factor. But whether this dilatation of the vessels arises from a direct action of the drug on the vessel wall or is only passive, remains to be proved. Pick and Wasicky (*loc. cit.*) noted a direct paralysing effect on the blood vessels while Maurel (*loc. cit.*) describes a primary increase in tonus in small doses leading to paralysis with larger doses. A direct paralytic effect on the blood vessels appears improbable to the present workers in view of the observation that the vessels of the frog in perfusion experiments were indifferent to the drug. The fact that a relatively larger dose was necessary to obtain an equivalent effect on blood pressure in spinal preparations when compared to the anæsthetised animals perhaps points to some central action—a depression of the vasomotor centre itself which is reflected in a generalized vasodilatation which partly contributed to the fall in pressure and is also partially responsible for the changes in the plethysmographic records.

Chopra and his co-workers (1927) and Epstein (*loc. cit.*) noted an increase in the spleen volume and the former workers found a concomittant decrease in the limb volume. Our observations show that the increase in volume occurs both in the splanchnic and peripheral areas and it appears to us that pooling of the blood in the splanchnic vessels, the area chiefly affected by *Entamœba histolytica*, may possibly help in the amœbicidal action of emetine. The effect on the vessels cannot be considered to be restricted particularly to the splanchnic area as has been suggested by some workers.

The quick recovery of blood pressure and of heart observed after the administration of small doses may suggest that the drug, in the doses employed in therapeutics, is innocuous but the 'lag' observed in regaining the original volume by different organs when studied in relation to the recovery of blood pressure, etc., as well as the observation that a repetition of the same dose after a considerable interval produces a phenomenon akin to sensitization would indicate that emetine always leaves some 'residual' effect which expresses itself by an intensification of the action of subsequent doses. And herein lies, in all probability, the danger of repeated, unlimited administration of the drug.

In intact animals, small (therapeutic) doses produce slight stimulation of the automatic movements of the intestine. Diarrhœa observed sometimes during a course of emetine treatment may be due partly to this slight increase in intestinal movements. Increase in movements might also be helped by the irritant effect of the drug when it is excreted into the gut; local vasodilatation may also lead to increased accumulation of fluid in the intestine. With larger doses, this stimulation is not observed while in some case depression occurs.

Injected intravenously into pigeons it does not cause emesis, indicating that the drug is not a direct stimulant of the vomiting centre in the medulla, whereas the experiments of Eggleston and Hatcher (1915) suggest that the emetic effects are due both to reflex and central stimulation. Vomiting, which is a late effect, after injection of the drug in man, may be either reflex from the heart or from the irritant effect of the excreted drug into the stomach.

Observations on the uterus indicate that the drug has no effect on this organ in concentrations which are expected in the body after therapeutic administration. Hence it can safely be used in pregnant women without any risk of inducing abortion as an effect of treatment.

Summary

1. Emetine hydrochloride depresses the heart, the auricles being more depressed than the ventricles. The effect is on the musculature and not on the nervous mechanism.

2. It produces a fall in blood pressure due to the depressant effect on the heart. Direct action on the vessel-wall appears improbable. The central depression might partially contribute to the fall in pressure.

3. Therapeutic doses produce slight stimulation of the intestinal movements and also slight congestion of the intestines. Large doses depress intestinal musculature.

4. It does not directly stimulate the vomiting centre in the medulla.

5. It has no effect on the uterus and, therefore, it is not likely to induce abortion, as has been generally believed.

Acknowledgment

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PROBLEM OF LATE, QUIESCENT AND LATENT SYPHILIS

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INTRODUCTION

By virtue of its involving a great diversity of views, late and latent syphilis promises to be an interesting subject for deliberation, there being much to say, a good deal to unsay and apparently as much to learn and unlearn. Besides the contentiousness of the material parts of the subject matter, my incentive for choosing this subject is twofold.

I am being not infrequently consulted by my professional colleagues for patients with some obscure symptoms or perhaps with none other than a vague but distressing feeling of not being well and I venture to suggest to them if the subtle workings of the ubiquitous treponema were directly or indirectly responsible and in most cases the least expected happens.

I shall here give the report of one of many such cases of unexpected happenings.

> *Case Report* 1. A middle-aged gentleman, a leading member of the legal profession consulted me with his attending physician for the following complaints. For about two years he had been feeling disinclined for mental or physical work; he was losing interest in his profession and had given up his favourite game of tennis. Any attempt at concentration would make him unaccountably tired and confused. He had frequent attacks of frontal neuralgia. His doctor told me that he had consulted many specialists including neurologists, ophthalmologists, E.N.T. specialists and other physicians. Sedatives, restoratives, tonics and climatic changes gave temporary relief but did not restore his mental vigour nor cure his headaches. Various laboratory tests were made but I was told that S.W.R. and Kahn tests were not done as there was no suspicion whatever of treponemal infection. On examination, we found some irregularities in reflexes and suspiciously palpable epitrochlear glands. He was persuaded to get the serum tests done and the positive reports were shockingly unpleasant surprises for him. An intensive course of arsenic and bismuth treatment was commenced: after the first two arsenicals his distressing neuralgia disappeared and a follow up treatment restored his physical and mental energy; he is now in the thick of his lucrative legal profession. At a chance meeting two years later, while travelling he had to introduce himself to me at a railway changing station as he had filled out to such an extent that I could hardly recognise him.

My second incentive is the increasing recognition of treponemal latency in cutaneous, skeletal, visceral, cardiovascular, nervous, mental and some other diseases. Here, I shall refer to observations I have made in Mental Hospitals. In a number of cases of seronegative neurosyphilis, arsenical treatment produced a remarkable clinical improvement, whereas in seropositive cases the reversal of serum reaction was not always commensurate with clinical improvement, the S.W.R. taking a very long time to reduce. Speculations are rife regarding the unaccountable lateness in the clinical manifestations of treponemal infection. Treatment of asymptomatic cases of latent syphilis presents us with the enigma what are we to treat when there is nothing to treat, or how to treat when there is nothing but just a positive S.W.R. Yet, we have an instinctive feeling that the great mimic treponema might be playing hide-and-seek with us and the patient. We are becoming more and more conscious of the ever-increasing types of latency in syphilitic patients. With regard to tuberculosis, it is said that while 80 to 90 per cent are potential cases, only 3 to 6 per cent are actual, whereas potential syphilitics are 10 per cent of which 50 per cent are latent and of these, 25 per cent are of the crippling, fatal type. We know that a patient with a late lesion of syphilis has passed through a stage of clinical quiescence, that seminal infection by a latent syphilitic is more frequent than has been recognised, that intact mucous membrane of patients with latent syphilis may contain treponema and he may thus be grossly though innocently infective, that an untreated (asymptomatic) syphilitic woman can give birth to only one healthy baby out of six. We now realise more than ever the importance and urgency of a study of the so-called asymptomatic syphilitic patients.

SOME VIEWS REGARDING MECHANISM OF LATE AND LATENT SYPHILIS

This involves the causal factor, the treponema, the pathological processes and tissue response directly or indirectly induced by it and the immunity generated in the host and parasite. This is not an occasion for an academic speculation on the nature and habits of the treponema, yet a few salient features can hardly be excluded from our consideration. The morphological characters of the spirochete, the spirals and their characteristic contortions, the granular transformation or at least a granular shedding of these have been described and studied in detail (Levaditi, 1932; Warthin) and if we call this a resting stage of the organisms and accept the fact that as such they are transmissible, we cannot but admit at the same time that these are of a resistant type (Levaditi, *loc. cit.*) and might lead to latency. Would this fact explain seminal infection of the fœtus? Treponemas have very rarely been found in the semen, yet paternal infection of the fœtus cannot be altogether ignored.

Treponemes have been found in the maternal aspect of the placenta after intravenous injections of these parasites. Mother's blood is not in direct communication with the fœtal blood and in order to reach the fœtus, the treponemes must pass through this barrier to the fœtal side of this organ. It is, however, conceivable that the granular form could either be with the semen or in the placenta *via* the mother's blood and these would find easier access to its fœtal side. On the other hand, if it be accepted that the fœtal infection is considered initial, the mother would be infected by a process of overflow regurgitation through the placenta in view of the fact that the placenta might have already undergone histological changes. This would explain sperm and ovular infections and the terms used in the past, metasyphilis and parasyphilis, are but other expressions of latent syphilis.

Morphological—Morphological variations of treponemes have also been described by Noguchi (1912) and a meningoencephalitic treponema by Brown and Pearce (1921), the paretic

type by Levaditi and Marie (1907), biological specificity of treponema by Georgi (1923) and others according to organs attacked, and preferentially the nervous system in which they live like saprophytes for indefinite periods. It has been suggested that some treponemes even acquire the habit of a symbiotic existence with other organisms.

L. W. Harrison (1931) says, "The tendency of syphilis is to become latent as far as outward manifestations are concerned. Animal experiments teach us that syphilitic infection is latent from the first in a definite proportion of cases, so that non-appearance of chancre is poor evidence of non-infection."

It has been said that untreated syphilitic infection persists through life but there may be varying periods of quiescence or latency without clinical evidence, apparently due to the fact that the infective agents are, so to say, incarcerated in penal settlements, being secured by defensive barriers created by reactive pathological processes. In the case of "late" syphilis, vague and inconstant clinical evidences may be present. but clinical manifestations of the so-called "stages" of syphilis, often modified in character and intensity are deferred. In late as well as in latent syphilis there is no superinfection with a stormy or eruptive invasion, but there is a low grade infection, call it sub-infection if you like, giving rise to chronic proliferative lesions. The infection does not take place abruptly, the low grade of it gives the invading treponeme and its host an opportunity to live in a state simulating symbiosis.

Now, how are long periods of latency to be explained? Is it due to a relative immunity maintained by slow, chronic inflammatory changes, particularly in the parenchymatous structures and the vascular system? The treponemes are in the lymph spaces and in this connection the lymphatic drainages of the thorax and abdomen may be taken into account with reference to the obscure symptoms of mediastinitis and cardio-vascular and abdominal complaints.

Often, the treponema are surrounded by lymphocytic and plasma cell infiltration; reactionary endarteritis (and periarteritis) are set up which lead to avascularisation of the parenchyma resulting in degeneration and fibrosis; this happens in the important viscera, the vascular system including the myocardium, around the vasa vasorum and in the nervous, skeletal and other tissues.

A Hypothetical Line of Demarcation

Colonel Harrison (*loc. cit.*) thinks that syphilis is instinctively latent and in some cases from the very beginning, yet we try to dissociate the classical course of stormy, eruptive syphilis from the late and latent types for purposes of differential diagnosis and treatment.

Late and latent syphilis, particularly the latter, assert themselves at first by a process of invasion and later, by involvement of tissues, particularly of the vascular system and the neuraxes. Some recognise two types of latency, early latency or quiescence in which the evidences of involvement appear within four years (Harrison *loc. cit.*), and late latency, after this period. These are distinct from the lateness in the manifestations of the traditional 'stages' as well as from clinical and serological relapses and recurrences. The 'no man's land' between the two will often be apparent. The differentiation will be facilitated by a careful study of the history sheet (in which family history may be significant), clinical examination of the patient, a close study of findings and interpretations of laboratory experts and therapeutic effects of antiluetic remedies. The nature of previous medication of the patient is of much clinical value and eventually an aid in deciding upon the future course of treatment; naturally, much care and scrutiny is necessary involving labour and time in order to decide the course of treatment and selecting appropriate remedial measures. Detailed study and investigations are thus of greater importance in latent cases than in a standard case of recent syphilis, because any slackening is more liekly to result in avoidable disasters.

The Clinical and Pathological Relationship of Latent Syphilis

Syphilologists have used the terms, 'clinical', 'serologic' and 'biologic' with reference to latency. 'Clinical latency', would mean non-recognisable or so-called asymptomatic syphilitic infection, the most dangerous type being asymptomatic neurosyphilis or neuro-latency. 'Serologically latent' cases are those which have negative serum and C.S.F. results in patients with clinical and pathological evidences of syphilis. 'Biologic latency' signifies a condition in which though the treponeme is present or presumed to be present, they do not induce irritative reactions. It is evident that this classification is overlapping but this perhaps is as near an approach as can be made.

I have found it useful for clinical purposes to place cases of late and latent syphilis, including neurosyphilis into four groups:—(1) Clinically and serologically positive. (2) Clinically negative and serologically positive (asymptomatic neurosyphilis if the involvement of the nervous system predominates). (3) Clinically positive and serologically negative (neurolatency in neurosyphilis). (4) Clinically and serologically negative.

In some of these cases a cumulative effect of sub-clinical relapses may have resulted in latency of one or the other type.

A patient with latent syphilis in apparently normal health may draw our attention to altered conditions which rouse suspicions of latency. We look for something which might be the instigating or stimulating factor or factors. These stimuli, as we know, influence the local or general defensive mechanism and liberate the causal organism which either produce a local mischief or get 'showered' into general circulation and there is a spirochœtal crisis. It appears that there would be a relativity in late and latent syphilis with reference to the intervening quiescent periods. There is a condition of spirochætemia with periods of symptomatic or serologic quiescence. In some cases there is a lateness of gross manifestations, local or general and in others, the latency is more subtle and indefinite and in the classical types, neuro-latency or vascular latency is conspicuous. There may be a so-called asymptomatic sero-positive latency or, as described by some, a monosymptomatic latency. As these stimuli break up, the barriers and treponemes run amuck in the circulation a condition of clinical or sub-clinical crisis or spirochætemia is produced. Broadly speaking the stimuli are:—

(1) Physical injury or strain. (2) Mental strain, worry and anxiety. (3) Intercurrent infections of acute or sub-acute type and constitutional diseases. (4) Pregnancy. (5) Erratic treatment.

(1) and (2) The first two items hardly call for detailed consideration. The effects of physical and mental strain, excessive wear and tear are reputed causes of flaring up latent syphilis.

(3) In a latent neurosyphilitic of paretic type, an acute attack of influenza may cause an unaccountable and misleading exacerbation of his nervous symptoms.

(4) Pregnancy in itself is beneficial to the mother, particularly if she is undergoing treatment but with reference to the fœtus, the prospects of an untreated mother for a live-birth fœtus is 16 per cent and if treated, 65 per cent.

(5) Effect of erratic treatment: The disturbance of immunity mechanism of the patient by antisyphilitic treatment plays an important part. Infection would presumably persist if patients are not treated or treated with subcurative doses, if the patient has susceptibility or idiosyncrasy to antisyphilitic drugs, if his tissue response is inadequate or if he had been infected by the so-called resistant strain of treponema. It has already been discussed how a relative immunity is developed and maintained; the reticulo-endothelial system plays a significant part in this process.

Vasculotropism which is mainly responsible for late and latent syphilis is characterised by arteritis and periarteritis. The clinical phenomena will depend on two factors, namely cytolysis and degenerative changes due to the waning of tissue response and, secondly, miliary tissue reaction giving rise to dysfunctive proliferation resulting in fibrosis. Both these may, however, be working concurrently, helping either process in perpetuating and accelerating the gross changes. The clinical picture will, therefore, be in accordance with the massive degenerative character, the minute or aggregate fibrotic character or a sum total of both induced by the treponema and its toxins.

Main Points Regarding Clinical Features Leading to Diagnosis of Late and Latent Syphilis

In late and latent syphilis the pathological processes are slow and insidious and in spite of the superficial quiescence, fibrotic and degenerative changes go on in the tissues generally and in those of internal organs, which in order of frequency, are large vessels, chiefly the aorta, the testes, the central nervous system, the liver and last of all endocrine glands. These facts deserve clinical and diagnostic considerations, particularly in cases of silent infections. Clinical examination is, therefore, to be directed searchingly in these directions. It is not intended to lengthen this part of the discourse by making it didactically text-bookish or by introducing tediously long case reports. It is, however, incumbent to make an attempt at elucidating facts which have a sequential bearing on the subject matter and support these when possible by brief references to illustrative cases.

Age and Sex factor—Latent syphilis is generally detected in older patients who are perhaps already suffering from some complicating or debilitating diseases, who have passed the age of sexual activity and propagation and whose expectations of life are getting limited; in them the associated conditions modify or complicate the nature of infection and tolerance to antisyphilitic drugs. The clinical reckoning of these cases would be the summation of these conditions and they should be treated accordingly. Women enjoy greater immunity, being less exposed to the stimulating causes; besides her child bearing period and pregnancy are conditions in her favour. It is not unusual to find syphilitic mothers with negative serum reactions during the child bearing period; this is often misleading to the clinician. Women as a rule, and pregnant women in particular, with latent syphilis should be treated effectively for the assurance of life and health of future children.

Some Diagnostic Problems

S.W.R. and C.S.F. tests are not infrequently confusing, a parallelism between clinical findings and these tests being inconstant. There may be clinical quiescence but serologic persistence in cases under treatment may show clinical improvement without serologic reversals; there may even be serologic reversals towards positive without clinical relapses. Generally speaking, blood tests are taken two months after a full course of treatment and repeated every six months for a period of at least two years if treatment is regular, otherwise more frequently and for a longer period. Our difficulties are with Wassermann-fast syphilophobic patients who have pinned their faith in the infallibility and security of serum tests and likewise with sero-negative latent syphilitics who think that they are being put through the ordeals of treatment unnecessarily. The C.S.F. should be examined particularly for indications of neurolatency as soon as a case is diagnosed as one of late or latent syphilis. Care and caution are necessary in making theca punctures in certain conditions; for instance, if there is a suspicion of brain tumour, in pregnant women, in elderly patients about 60 with apparent involvement of the central nervous system and in patients with gross cardiovascular disease. Incidentally, it may be mentioned that lumbar punctures are contraindicated as valueless and risky in untreated cases of early syphilis, because the negative fluid may become positive later and for the fact that withdrawal of the fluid may so disturb the balance of the circulatory and C.S.F. pressures as to render it possible for the treponema to pass through the meningochoroid barrier which was as yet efficient.

Laboratory reports are of value as interpretations of delicate tests by single-minded experts; we bear these in mind while as clinicians, make patient and painstaking investigations keeping in view the biological and pathological basis of the clinical manifestations of signs and symptoms and try to reconcile them with laboratory findings. These are onerous undertakings in cases of latent syphilis which is characterised by clinical obscurities, diagnostic complexities and laboratory uncertainties. Indeed, we do not infrequently find ourselves in a maze of confusing contraries which emphasize the necessity for close observation of the minutest clinical details and unbiased balancing of the clinical and laboratory findings for correct diagnosis and therapeutic lead. Further, it is our common experience that a patient with latent syphilis before consulting a syphilologist had already been round to other specialists: the radiologist, neurologist, psycho-analyst, urologist, dermatologist, cardiologist, ophthalmologist, serologist, etc., who had looked at him from their particular angles of vision and given him their opinion, expert and honest but perhaps lop-sided and contradictory. We have, therefore, to proceed cautiously to make a complete

physical examination, take a comprehensive view of the case based on the summation of expert opinions and our own findings.

SPECIAL LINES FOR CLINICAL EXAMINATION

Previous history of the patient: Family history, in order to eliminate familial or heredo-syphilis, a detailed account of the nature of previous treatment, to ascertain possibilities of fastness or antagonism or the extent to which his immunity factor may have been disturbed. History of number and frequency of miscarriages, if any, premature births, still births and neonatal syphilis. The possibilities of other causal factors than syphilis in the clinical phenomena.

Examination of the patient: This requires investigations in other directions than those directly connected with the patient's complaints; of these, the most important are interrogations regarding his general mental condition, fatigue, sleeplessness, loss of appetite, deviation, if any, from his erstwhile normal physical and mental health, nerve conditions, reflexes, special senses (such as vision and hearing), ophthalmoscopic examination, etc.

Differential diagnosis of neurosyphilis from non-syphilitic lesions of the central nervous system and allied conditions often present intricate problems. Among these may be mentioned: arteriosclerosis, cerebral abscesses and effusion, meningo-vascular and meningo-encephalitic lesions, granulomata, neoplasms, etc.; psychoses, epilepsy, dementia, multiple sclerosis, etc.

In testing for reflexes, the pallæsthesiometer is a rather handy instrument for Verne's vibratory test, alterations in bone sensibility, particularly pallanæsthesia are often useful guides in obscure cases.

As a large proportion of cardiovascular diseases is directly or indirectly of syphilitic origin, it is desirable to eliminate syphilis first and then think of other causes.

Visceral syphilis is not uncommon. As a matter of fact Griffith Evans (1933) thinks that the percentage is much higher than is generally believed.

In this country liver affections have to be differentiated; the 'silent' amœbic liver and the 'silent' syphilitic liver or amœbic infection of a syphilitic liver or *vice versa* may at times be confusing. I have seen many cases of chronic digestive trouble due to hepatic dysfunction steadily improve under antisyphilitic treatment.

Thoracic organs suffer a good deal more than one would think; mediastinitis, aortitis with or without dilatation, particularly of the arch projecting upwards with suprasternal pulsation and bruit often come under our observation. Fluoroscopic examination, stereoscopic radiograms and electrocardiograms reveal many things and the readings of these and their interpretations would be useful if studied in consultation with the radiologist and cardiologist.

SOME POINTS RELATING TO THE LINE OF TREATMENT OF LATE AND LATENT SYPHILITICS

(1) The patient has to be treated in order to render him safe and useful to himself and his family, to the society and to his future generations.

(2) Cases in which due to the nature and extent of involvement a complete cure cannot be achieved, attempt is made to arrest progressive damage by inducing tissue repair and immunity mechanism so as to ensure a life of reasonable comfort and save the patient from being a burden to the state.

(3) To guard against complications by including in the programme the treatment of collateral diseases and disorders in the patient such as glycosuria, malaria, kala-azar, tuberculosis, leprosy, influenza, gonorrhœa, nephritis, hepatitis, etc.

(4) In cases of obscure metabolic disorders and subnutrition, to investigate the possibilities of a latent treponemal factor in causing visceral or endocrine dysfunction and plan treatment accordingly.

(5) The aim of the treatment is to fight infection but the goal is to cure the patient of his complaints and disabilities. If during treatment, clinical and laboratory findings do not run correspondingly parallel, the reversal of serum and C.S.F. reactions to normal, the removal of the last residue of treponemal activity or the total extermination of the treponemes which to all intents and purposes are incarcerated or scotched should not be our obsession.

(6) For surgical lesions, provided it is not a condition necessitating emergent measures, it would be to the advantage of the patient to postpone surgical interference till after adequate antisyphilitic and collateral treatment.

Biological cure of latent syphilis may be safely considered unattainable, it is a dream of the optimist which is seldom if ever realised. Our aims are, as has been stated, to render symptomatic relief by bringing about anatomic normality as far as possible and failing this, functional normality of the system; to stop further progress of the disease; to prevent relapses and neuro-recurrences; to render the carrier non-infective to others and finally to render him as serviceable to the state as possible in the situation.

Generally speaking, in the earlier stages of syphilis tissue immunity in which the reticulo-endothelial system plays a notable part, is in the process of establishment and may be temporarily abolished or seriously affected by antisyphilitic drugs. Treponemal foci in the nervous system which are notoriously inaccessible to arsenobenzols, would take advantage of the patient's temporary deficiency of defence mechanism and multiply. To enter the nervous system, the products of N.A.B. must pass through the meningo-choroid plexus barrier between the blood and C.S.F., and the permeability of this structure requires to be altered for this purpose. In late syphilis, however, immunity is better established, perhaps even in the nervous system, so the C.S.F. does not receive the shock from N.A.B.; if there is permeability, products of the drug would reach it. For this reason intermittent treatment is considered better than continuous treatment by some syphilologists. It is considered better to commence with heavy metals and follow up with arsenic.

The treatment on a general basis should be alternate courses of bismuth and arsenic. Some suggest silver-salvarsan in weekly doses with rest periods according to tolerance and response. Hydrarg inunctions as a concurrent or interim measure are useful. Tertiary Iodide pills may with advantage be given during the rest periods. I have found interim injections of iodine (entodon) useful in intractable neurosyphilis cases in which S.W.R. remains doggedly unreduced; with patience and perseverance, may be, after cessation of treatment in some cases, it clears slowly down to negative. Here the quantitative measurement of the serological test is helpful.

TREATMENT OF ACCIDENTAL HAEMORRHAGE

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Introduction

During the last 9 years, 18,591 women were confined in the K. E. M. Hospital of whom 103 had unavoidable hæmorrhage and 44 had accidental hæmorrhage, during the last 3 months of their pregnancy. This paper deals only with the cases of accidental hæmorrhage.

Though various causes, including deficiency of certain vitamins, have been postulated for the occurrence of accidental hæmorrhage, toxæmia is considered to be the chief exciting cause.

The hæmorrhage may be revealed or concealed or of a mixed variety. The most dangerous type is the concealed one which, fortunately, is rare. In the revealed type, bleeding P.V. is visible, alarming the patient and the relatives; while in the severe concealed type there is a sudden severe pain in the abdomen making the patient restless. Her face turns pale and her breathing becomes laboured. On examination, pulse is found to be weak and rapid, abdomen distended, tense and tender, skin cold, blood pressure low. The shock is very severe. The fœtal heart sound is usually not heard and the fœtal parts cannot be felt. Vaginal examination may not reveal any dilatation of the cervix, but there may be very slight bleeding. The contractile power of the uterus is lost. The only other condition which may be confused with such cases is tonic contraction of the uterus, where the uterus is smaller, membranes are ruptured, os is dilated and dry, presenting part is impacted and the patient suffers from terrible exhaustion with impending rupture of the uterus.

In external accidental hæmorrhage, P. V. examination shows blood clots in the vagina; and no placental tissues will be felt near the internal os.

In the mixed variety the severity of a case must not be judged by the amount of external hæmorrhage but by the general condition of the patient. Slight external hæmorrhage may be accompanied by severe internal hæmorrhage.

Treatment

Each case has to be treated on its merits. Keen and patient observation checked by wide and varied experience is essential for the formation of a correct judgment of a case. However, as a rule in all types of cases, shock, if present, is treated first.

In a mild revealed case if the patient is not in labour morphia injection is given on admission, a sedative mixture is prescribed and rest in bed for 10 days is ordered; while in the severe type if the patient is *not* in labour, a Cæsarean section is advised. In all revealed cases, if the patient is in labour, the membranes are ruptured, 3 units of pituitrin are given every half-an-hour until 1 to 1½ c.c. has been given. If vertex presents, Willet forceps is applied to the scalp with one pound traction; if breech, one foot is brought down and a pound traction is applied to it; and if transverse, the appropriate method is adopted (*vide* Table, page 46).

In concealed hæmorrhage no active treatment is undertaken until the shock is treated. And then if the patient is not in labour, the main line of treatment consists of rest, and plenty of fluids. A careful watch is kept over the size of the uterus and the condition of the pulse. Blood pressure is taken often. If the patient is in labour and the os is dilating, the membranes are ruptured. 3 units pituitrin are given every half-an-hour until 1 to 1½ c.c. has been administered, and an abdominal binder is applied. If bleeding continues and the patient is not in labour a Cæsarean section with or without hysterectomy is to be resorted to.

In all cases of antepartum hæmorrhage one should watch for postpartum hæmorrhage. Blood or saline infusion is given in accordance with the requirements of the case and toxæmia is treated when it is present.

In the series of 44 cases listed in the attached table, not one case of severe concealed hæmorrhage was encountered. All were multiparas except one. Albuminuria was present in 18 cases and systolic B.P. above 130 in 4 cases. In many cases urine was not examined and B.P. was not taken as the patients were admitted with strong labour pains and taken straight to the labour room.

Two patients died giving a mortality rate of 4·54 per cent. 26 babies were born dead or who died soon after birth, placing the mortality rate at 59·09 per cent.

I am grateful to Col. J. C. Pyper, O.B.E., I.M.S., for encouraging me to write this article.

(*Continued from page 44*)

Artificial induction of fever as a physiotherapic measure is an excellent collateral in syphilotherapy and is definitely beneficial in late stages. Induced malaria and raising the body temperature by direct methods of heat application (*e.g.* Kettering method), or by electropyrexia (diathermy and short wave inductothermy) in a fever cabinet make a good 'second front' attack and are substantial supports to chemotherapy. I have with advantage occasionally combined mechanical methods of heating with diathermy and inductothermy for prolonged pyrexia and in suitable cases kept the applicators of these around the local lesion while general pyrexia was in progress, with the object of raising this area to even higher temperature. It is too much to expect chemotherapy unaided to overcome an infection, ultimate cure depending on the immunity response of the patient. There are evidences that induced pyrexia, working presumably through the reticulo-endothelial system, stimulates immunity processes, whereas it is assumed that chemotherapy alone is likely to affect the development of antibody response by thwarting the antigen mechanism. This pyrexia, therefore, is in principle immunotherapy and is a good ally to chemotherapy.

(*To be continued*)

TABLE SHOWING THE CLINICAL CONDITION OF THE MOTHER, TREATMENT ADOPTED AND RESULTS OBTAINED

Serial No.	*Para*	*Presentation*	*Albumin*	*Blood Pressure*	*Other complications*	*Rupture of Membrane*	*Pituitrin*	*Willet Forceps*	*Forceps*	*Condition of Child*	*Condition of Mother*	*Remarks*
1	6	V	—	—	A	+	—	—	—	D	Cured	
2	3	V	—	—	—	—	—	—	—	a	„	
3	6	V	+	—	—	+	—	—	—	a	„	
4	2	T	—	—	A	+	—	—	—	a	„	Internal podalic version done
5	6	V	—	—	—	+	—	—	—	D	„	
6	6	V	+	—	A	+	—	+	—	D	„	
7	7	V	—	—	—	+	—	—	—	a	„	P.P.H.
8	4	V	—	—	—	+	+	—	—	a	„	
9	4	V	—	—	A	+	+	—	—	D	„	
10	4	V	+	—	—	+	+	—	—	a	„	
11	5	V	—	—	—	+	—	—	—	a	„	
12	2	V	—	—	—	+	—	—	—	a	„	
13	4	V	+	—	—	+	+	—	—	D	„	
14	6	V	+	—	—	+	—	—	—	D	„	
15	6	V	—	—	—	+	+	—	—	D	„	
16	6	V	+	—	—	+	—	—	—	D	„	P.P.H.
17	5	V	+	—	—	+	—	—	—	D	„	
18	3	V	+	—	—	+	—	—	—	a	„	
19	2	V	—	—	—	+	—	—	—	a	„	
20	1	V	+	—	—	+	+	+	—	D	„	
21	5	V	—	—	—	+	+	—	—	D	„	P.P.H.
22	7	V	+	—	—	+	—	—	—	D	„	
23	6	V	—	—	—	+	—	—	—	D	„	
24	11	V	+	$\frac{14}{10}$	A	+	+	—	+	D	D	Heart failure
25	2	V	—	—	—	+	+	—	—	a	Cured	
26	8	V	+	—	A	+	—	—	—	D	„	
27	6	V	+	—	A	+	—	—	—	D	„	
28	4	V	—	—	—	+	—	—	—	a	„	
29	11	V	+	$\frac{180}{100}$	—	+	+	—	—	D	„	
30	2	V	—	—	—	+	—	—	+	a	„	P.P.H.
31	4	B	+	—	—	+	—	—	—	D	„	
32	6	V	+	—	—	+	+	—	—	D	„	
33	7	V	—	—	—	+	—	—	—	D	„	
34	6	V	—	—	—	+	—	—	—	D	„	
35	10	V	—	—	—	+	—	—	—	a	„	
36	4	V	—	—	—	+	+	—	+	a	„	
37	8	V	—	$\frac{130}{90}$	—	+	+	—	—	D	„	
38	3	V	—	$\frac{120}{100}$	—	+	—	—	—	D	„	
39	10	V	—	—	—	+	+	+	—	a	„	
40	7	V	—	—	—	+	—	—	—	D	„	
41	9	V	—	—	—	+	—	—	—	a	„	
42	9	V	—	—	—	+	+	—	—	D	„	
43	5	B	+	—	—	+	—	—	—	D	„	
44	10	V	+		Twins	—	+	—	—	a	D	P.P.H. & heart failure.

Abbreviations used in table:

V=Vertex; A=Anæmia; D=Died; a=Alive; T=Transverse; P.P.H.=Postpartumn hæmorrhage; B=Breech.

SPECIAL ARTICLE

RECENT PROGRESSES IN OPHTHALMOLOGY*

SURENDRA NATH GHOSH, L.M.S., RAI BAHADUR,
Patna.

LADIES & GENTLEMEN, I thank you most cordially for the great honour you have done me by asking me to preside in this section of the Conference. I was rather surprised at your choice asking one to preside who has practically retired from profession when it would have been quite easy for you to make a better selection. I am fully aware of my limitations and you will please excuse my shortcomings. I accepted your kind invitation not to miss this opportunity to hear of recent developments in the subject and to get new ideas from young and fresh minds. A man in our profession, is a student all his life.

Among the branches of Medical Science no one can deny that ophthalmology has progressed as definitely as any other.

In the eye, because of the transparency of its media, the normal structure of the living tissues and the pathological processes which may occur in them can be observed directly.

The introduction of slit-lamp microscopy proved a valuable instrument in recent advances in ophthalmogical diagnosis, and this is mostly due to brilliant researches of Vogt. As a source of light, metallic or carbon arc lamp has been generally employed. Later on biomicroscopy has been done with mercury vapour lamp and polarised light. Biomicroscopy and spectro-analysis is done by fitting a spectroscope into one ocular tube of the microscope. The applications of this technique are limited in determining the histochemical condition of the tissues in as far as this yields to spectro-analysis.

The recesses of the angle of the anterior chamber, hitherto an unexplored region in the living eye, have been brought into view by gonioscope combined with the use of a contact glass. The space from the pupillary zone of the iris to inner concave dome of the cornea and when there is a gap in the iris, as after iridectomy. the ciliary processes and the region beyond as far as pars ciliaris retinæ are successively visible with this instrument. This method has a great clinical importance not only in diagnosing gummata, tubercles or neoplasm but in the elucidation of the condition of the angle of the anterior chamber in glaucoma. It may guide us as to the line of treatment or to operative measures, trephining or iridectomy.

The different rays of the spectrum have been taken advantage of by using filters to cut off the rays which are not required for the examination of particular structures in the eye. The diagnostic use of red-free light in the study of retina and of yellow-green light in the study of blood vessels in the living eye is of great value to an ophthalmologist. As a source of light, an arc lamp is generally used.

The researches in embryology of the eye have taken a share in the clinical application of ophthalmology to work out some solution of clinical problems especially of congenital defects. It must be admitted that some portion of the research may be more or less academic but the greater portion of it has been taken up by ophthalmologists for solution of clinical problems. Who knows that the other portion. in course of time, will not be useful and utilized for the same purpose.

Gullstrand's binocular ophthalmoscope is an ideal and useful instrument in a teaching clinic. A stereoscopic view is obtained. By replacing the usual binocular telescope by a monocular eye piece and a periscope, two observers (teacher and student) may view the same fundus at the same time.

Tribute must be paid to the work of Foster Moore, who has done a great deal with regard to retinal hæmorrhages determining their local mode of origin and subsequent history. He has shown that blood disease hæmorrhages are mostly, if not always, of capillary origin. From alterations occurring in the capillary endothelium by toxin or altered conditions of the blood, the permeability of the capillary endothelium is increased.

Monocytosis is prominent in the blood count of sympathetic ophthalmia. The increase is a relative one as there is no general leucocytosis and such relative increase of monocytes is found in malaria, syphilis and all protozoal infections. Because if this finding, the modern treatment of sympathetic ophthalmia is largely centred in the use of N.A.B. injections with some satisfactory result. The old theory that the disease is tuberculous in origin has, of late, excited a considerable amount of attention. About the infective theory no causal organism has ever been isolated; it may be due to an ultra-microscopic virus. Of the anaphylactic theory it can be said from the experiments carried so far that the development of allergy seems to exercise a predisposing role in the ætiology of the disease; it can not be the determinant cause.

Whether a deficiency of blood calcium predisposes to retinal hæmorrhages is not known, but Cammidge, without ignoring the influence of vascular diseases, considers that when a low blood calcium is found in cases of diabetic retinitis, as is frequently the case, it forms an essential factor in the production of hæmorrhages.

Eales' disease (recurrent hæmorrhages into the vitreous) may not calcium deficiency be a contributory factor, if not the cause? The epochal work of Gonin opened a new era in the treatment of retinal detachment. Subsequently, three other variations of his original method, chemico-caustic, diathermy and electrolytic have been discovered. Vogt insists on the great advantages of cathodic electrolysis with a very weak current. Coppez of Brussels is of opinion that the most logical way to produce an adhesion between the retina and the choroid is the scleral diathermo-coagulation. He has a device which he names pyrometer-electrode. It enables one to measure the temperature of the coagulated tissue at the right place and at the very moment the eschar appears. The pyrometer electrode is used in just the same way as an ordinary diathermic cautery. But instead of reading the milli-amperemeter one reads only the registration on the pyrometer *i.e.,* it is a combination of a coagulating electrode and an electric thermometer.

Foster Moore found very satisfactory results from radium treatment in some of the intra-ocular lesions. He used radon seeds either by interstitial insertion or surface application; inter-

* Presidental Address delivered at the Section of Ophthalmology and Otorhinolaryngology of the Scientific Section of the XIX All-India Medical Conference, Patna, April, 1943.

stitial insertion for prominent growths whilst for flat growths surface application is best. He says that gliomata and angiomata can be cured by this means. About melanotic sarcoma, whilst the cells of a melanotic sarcoma have been shown to be vulnerable to radon seeds inserted interstitially, further experience is needed before it can be said that these growths can be destroyed.

Years ago, Mr. Stephen Mayou gave the results of several lines of treatment for retinitis pigmentosa. They were (1) the use of amyl nitrite (2) paracentesis of the cornea and (3) trephining. He had the best results after trephining. Presumably the rationale was the same in all these forms of treatment, namely, an improvement in the circulation of the choroid and retina. Few years ago cervical sympathectomy was done in retinitis pigmentosa with indifferent results by Spence Meighan. The operation was done in far advanced cases. If any good was possible by sympathectomy in retinis pigmentosa, it must be taken at an early phase of the disease when the vascular changes had not gone far, that is the view held by Hepburn. It is worth while giving a trial as we can do very little or no good by medicinal treatment.

Some of the diseases of the eye respond well either to the therapeutic effect of general ultraviolet radiation of the skin or to the application of the rays directly to the eye itself. Ocular tuberculosis in any form responds particularly well to general light treatment, as iridocyclitis, keratitis, dacryocystitis and phlyctenular keratoconjunctivitis. In infective iridocyclitis and choroiditis the effect is not so marked.

One has to be careful with the local application of the rays, about the choice of the instrument, proper focussing, dosage, avoidance of the lens from the exposure. The local application of rays has been tried in chronic blepharitis, chronic conjunctivitis and vernal catarrh.

A considerable amount of work has been done on the physiology of intraocular circulation and to assess the value of the pressure in the blood vessels. There has been much controversy about the mechanism of the formation and absorption of the intraocular fluids and their relation to intraocular pressure. A clear conception of their value will lead to a rational understanding of the pathology of some ocular disturbances. We know now more of lens metabolism that we did a few years ago.

There are some of the eye problems of which the cause is still uncertain. A glaucomatous eye is termed, "a sick eye in a sick body"—whether the sick eye is primary or the sick body? Gonioscope has demonstrated that in life, in some cases of glaucoma, the angle of the anterior chamber may be perfectly and entirely free.

In primary glaucoma the evolution of peripheral synechiæ is a consequence rather than a cause. The cause of (primary) glaucoma is still an unknown factor.

We know that any form of radiant energy, ultraviolet heat, infra-red or radium will coagulate lens protein and produce opacities in the lens by process of denaturation and agglutination. This might explain radiational cataract; about senile cataract is it not possible that accompanying the physiological changes of senility in the lens something due to hormonic disturbances or some other factor completes the process?

Enormous progress has been registered in the knowledge of the life history of the cellular elements of the blood and consequently in the value of differential counts—will the differential count of blood give us some clue to diagnosis in some of the eye troubles of uncertain cause?

The fundus changes are so varied that often we can not classify them, is it not probable that some of these retinal changes, for which we do not find any definite cause, are really an indication of a general, mild constitutional disorder and have their counterparts in other body tissues, though it is in the eye alone that the pathologic change is discoverable?

I have told you nothing new. It is a brief, a very brief resumé of some of many developments in ophthalmology within the last 20 years or so. It is just like an old story—told in a dull way by an old man and I thank you sincerely for your patient hearing. Now, gentlemen, let us hear something new and instructive from our young friends.

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P. B. MUKERJI,
Hony. General Secretary, I.M.A.

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MEDICAL PREPAREDNESS SERIES

The war coming on to the borders of India has revealed to us all the terrible aspects of the menace and it has become appparent that the profession shall have to take up quite a large share of responsibility in A.R.P. measures. A series of articles on war medicine, A.R.P. and allied subjects is being published with the idea of helping the cause of necessary medical education. These are the sixth and seventh articles of the series—EDITOR, *J. Indian, M. A.*

VI

WARTIME DIETARY

K. MITRA, M.B., D.P.H. (CAL.), D.T.M. & H. (LOND.), M.B.E.
Officer-in-charge, Nutrition Scheme, Bihar, Patna.

It is an anachronism that inspite of its very apparent destructive qualities war has very often stimulated research in the subject of food. The manufacture of beet sugar on a large scale in France closely followed the blockade of that country during the Napoleonic war. The application on industrial scale of Haber's process for the manufacture of nitrogen for the fertilisers (and explosives also) and Bergius's work on the production of substitute sugar from wood became possible owing to the shortage of sugar and nitrates in Germany during the last great war. In the present global war many of the things eaten by the population are quite new as edibles even in the comparatively well-fed countries, such as Britain or America. The introduction of such new foods has been made possible owing to the tremendous advance made in the newer knowledge of nutrition within recent years.

Nutrition workers can think in terms of optimum standards only when the food supply is abundant, but whenever a country or a geographical unit suffers from or is threatened with food shortage owing to abnormal conditions such as war or famine, the scientist "has frankly to degrade his skill" in the words of a reputed food eronomist, and think only in terms of minimum standard and suggest emergency diets. Such is the origin of the oft-quoted Emergency Diets of Stiebeling and Ward. These diets aim at maintaining the normal physiological activity of the consumer with the minimum amount of available food or substitution of one food by another of equal or almost equal nutritive value.

It is one of the basic principles of the science of dietetics that quantitative requirements in the dietary, takes precedence over the qualitative needs. In other words, unless the calorific value of the diet be adequate it would be absurd to devise means to improve the quality of the diet by the inclusion of edibles rich in protein, mineral matters or vitamins. In India even in peace times the bulk of the population consume a diet consisting mostly of rice or wheat. On a very liberal computation cereal grains contribute about 80 to 96% of the energy value in such diets. Under conditions beyond the control of the average consumer shortage of rice and wheat has been felt in a very large part of the country. Why the shortage has been caused or could the shortage be removed by inter-provincial transport of food grains from surplus to deficit area or by import of food from outside and lastly whether such import is practicable are problems that can only be solved by politicians, administrators or at best by politico-scientists. The drive for growing vegetables in the backyard of every dwelling house at little or no cost inaugurated by the official and non-official agencies deserve no comment. If only the efforts of the sponsors materialise it needs no telling that inclusion of vegetables in adequate quantities would not only tend to balance the war time diet but also the diet of the population for ever. In the present note an attempt has been made to review the nutritive qualities of those energy food which may in conditions of emergency partially replace rice or wheat in the dietary of the population.

The cereals in use in India are rice, wheat, maize, barley *junera* (great-millet), *bajra, marooa* (red-millet) and some of the smaller grains like *sanwa, kodo, marha* etc. Amongst the cereals wheat appears to be the most nutritive food grain and rice the poorest with the other cereals ranging themselves in between the two in the order of their nutritive value. As regards rice, one quick method of increasing the total amount available for consumption seems to be to discourage decortication (removal of aleurone layer). It is a fact that if rice be not decorticated after shelling, the yield will increase by 3 to 4%, if not more. And unpolished rice possesses superior nutritive qualities as compared to the polished varieties. Polishing of grains may result in a loss of about 30% in fats, 25% in protein, 50% in ash content and of about 100% in vitamins content. Unpolished grains have one great disadvantage in the fact that its keeping qualities are very poor and as such traders may object to stock such grains in large quantities for sale. But for consumption in rural areas where paddy grains as such are stored in home or purchased periodically for domestic consumption the people are not likely to suffer if they are advised that grains should be consumed within a fortnight of husking.

If possible the people should be discouraged to wash the grains too much before cooking or to throw away cooking water (*marh*) as such processing results in no inconsiderable loss of more valuable nutritive principles preserved in the grains. People of the lower income groups particularly in the rural areas often consume the *marh*, but people of the lower middle classes also should follow this healthy practice. In this connection the people should be told that just enough water to boil the grains and no more should be added to the cooking pot. The fluffy type of cooked rice is more completely digestible than the sloppy type which is likely to be swallowed after incomplete mastication and salivation and result in a sense of unusual heaviness after meals or minor digestive troubles in persons who hurry over such meals.

Of the other cereals *marooa* deserves special mention as *it is the only cereal grain which is rich in calcium.* It is an aphorism that a mixture of cereal grains in the menu is more health-giving than one containing rice alone as a major source of energy food. A very large percentage of the actual cultivators or producers of cereal grains other than rice or wheat do consume such grains but other groups of population and even those who cannot afford to purchase the proper quota of rice or wheat for their own consumption have an unjustifiable bias against barley, *makai* or other millets. Their dislike seems to be based on an assumption that such foods are not easily digestible and when

they are confronted with the fact that a large number of people in this country are digesting such foods without any apparent illness their invariable reply is to the effect that "one man's meat is the other man's poison."

But each of these grains can be rendered more palatable, digestible and assimilable by the process of malting which can be carried out in every home with the help of an ordinary household container or bowl (*gamla*) and iron cooking pan. The grains can be malted with practically no added expenditure provided the householder takes a little trouble over it. The essentials of the process being to soak whole grains (cleaned and picked) in clean water for 24 hours changing the water 4 to 6 times during the interval. After soaking the water is drained out, the grains are heaped and covered with wet cloth till sprouts appear. By this process the enzymes are released and the concentrated food in the grains are acted upon resulting in the hydrolysis of starchy substances into dextrin and maltose and that of proteins into peptones and amino acids. The slightly sprouted grains are thinly spread over mat and the sprouting allowed to continue till the sprouts are ½ to ¾ inches long. The sprouts are then removed from the grain as completely as possible by hand rubbing or preferably with a hard brush as the presence of sprouts may impart a slightly bitter taste. The de-sprouted grains are then dehusked and the clean grains are roasted on slow fire till they are slightly brown. The grains are then powdered into flour and may be used in the preparation of *chapathi*, biscuits, gruel etc. To improve the taste addition of a little salt and sugar may be necessary. In the rural areas the millets and some of the other grains especially maize are usually parched before grinding them into flour. The coarser particles can be strained through fine muslin and ground once again.

The other group of foods which can replace rice in the diet are the root vegetables such as sweet potato, colocasia, tapioca and yams of the dioscorea group. The edible tubers included in the list were found to be consumed by certain groups of population during a dietary survey by the author in the province of Bihar. On the average the tubers contain about 25% to 30% of carbohydrate by weight as against 70 to 80% present in the cereal grains. But this apparently low carbohydrate content is not *real* as the moisture in tubers ranges from 65 to 80% approximately as against 9 to 12% present in the different cereals. Tapioca, sweet potato, soothney and yams of dioscorea group can be cultivated in the kitchen garden and waste land not suitable for growing other crops. Some of these tubers are extremely mealy and can attain a very large size. Some are afraid of using tapioca as it is said to contain traces of hydrocyanic acid. But this disability can be removed by boiling the tuber and then drying and reducing it to flour. Tapioca is used as a staple food by the people in general over large tracts in South India. The table annexed gives the food values of the different grain foods and the edible tubers and has been compiled from Health Bulletin No. 23 Government of India and from the series of publications on food values from this laboratory.

Suggestions for replacement of rice by grain foods or root vegetables are indicated in the three dietary schedules noted below.

EMERGENCY DIETARY SCHEDULE

No. I

Constituents:	
Rice	10 oz.
Millet	8 oz.
Pulse	3 oz.
Non-leafy vegetables	8 oz.
Root vegetables	2 oz.
Leafy vegetables	4 oz.
Fat and oil	2 oz.
Fruit	2 oz.
Food value:	
Protein	72·25 gm.
Fat	67·71 gm.
Carbohydrate	486·2 gm.
	2,919 calories

No. II

Constituents:	
Rice	8 oz.
Millet	8 oz.
Pulse	3 oz.
Non-leafy vegetables	6 oz.
Root vegetables	8 oz.
Leafy vegetables	4 oz.
Fat and oil	2 oz.
Fruit	2 oz.
Food value:	
Protein	69·81 gm.
Fat	67·78 gm.
Carbohydrate	591·0 gm.
	2,930 calories

No. III

Constituents:	
Millet	12 oz.
Pulse	3 oz.
Non-leafy vegetables	6 oz.
Leafy vegetables	4 oz.
Root vegetables	12 oz.
Fat and oil	2 oz.
Fruits	2 oz.
Food value:	
Protein	68·02 gm.
Fat	70·10 gm.
Carbohydrate	429·0 gm.
	2,691 calories

TABLE SHOWING FOOD VALUES OF VARIOUS CEREALS AND EDIBLE TUBERS

Sl. No.	Indian name	English name	Latin name	Moisture %	Protein %	Ether extractive %	Carbohydrates %	Mineral matter %	Calcium %	Phosphorus %	Crude fibre %
	CEREALS :—										
1.	Arwa chawal	Rice raw homepounded	Oryza sativa	12·19	8·49	0·35	78·27	0·70	0·007	0·165	—
2.	Bajra	Millet	Pennisetum typhoideum	9·26	9·06	4·40	74·66	1·18	0·010	0·218	1·44
3.	Basmati chawal	—	Oryza sativa	10·01	6·63	0·33	82·32	0·71	0·003	0·121	—
4.	Bhet	Seeds of water lily	Nymphea lotus	9·99	8·25	0·98	75·73	0·87	0·022	0·112	4·18
5.	Dhan ka lawa	Puffed paddy	Oryza sativa	10·49	8·41	4·74	69·83	1·14	0·006	0·210	5·39
6.	Gehum ka atta	Whole wheat flour	Tricitum vulgare	12·58	12·77	2·40	68·88	2·21	0·060	0·319	1·16
7.	Jao	Barley	Hordeum vulgare	12·48	11·47	1·28	69·34	1·51	0·025	0·225	3·92
8.	Joar, Junera, Cholam	Big millet	Sorghum vulgare	11·88	10·42	1·93	73·99	1·76	0·027	0·282	—
9.	Kalamdan or Kalamkali chawal	Raw milled rice (medium)	Oryza sativa	10·47	6·09	0·23	82·65	0·56	0·003	0·120	—
10.	Kodo	Millet	Paspalam scrobiculatum	10·26	5·64	1·66	81·41	1·03	0·024	0·103	—
11.	Makai or Bhutta	Maize tender	Zea mays	79·36	4·33	0·46	15·20	0·65	0·005	0·102	—
12.	Maida	Refined wheat flour	Triticum vulgare	13·30	11·00	0·90	74·10	0·40	0·020	0·092	0·30
13.	Makai ka lawa	Puffed maize	Zea mays	7·35	9·24	4·78	74·59	1·92	0·005	0·322	2·12
14.	Marha	Common millet (boiled & parched)	Panicum miliaceum	6·54	12·90	1·96	75·76	1·99	0·015	0·351	0·85
15.	Marooa or Ragi	Red millet	Elousine coracana	10·88	6·14	1·97	78·47	2·05	0·301	0·216	0·49
16.	Purna chawal (Wardha)	Rice with complete aleurone layer.	Oryza sativa	11·98	7·10	2·50	76·91	1·51	0·012	0·264	—
17.	Ramsal chawal	—	Oryza sativa	11·00	7·40	0·75	79·73	1·12	0·006	0·170	—
18.	Samjira chawal	Fine arwa rice	Oryza sativa	10·33	7·03	0·15	81·75	0·74	0·002	0·130	—
19.	Sanwa	Millet	Panicum crusgallivar frumantaceum	11·87	6·22	2·23	65·41	4·44	0·019	0·282	9·83
20.	Singhara ka atta	Water chestnut flour	Trapa bispinosa	11·61	10·23	3·22	72·00	2·94	0·082	0·424	—
21.	Soojee	Semolina	Tricitum vulgare	9·28	9·05	0·95	80·16	0·56	0·044	0·151	—
22.	Usna chawal	Rice parboiled milled	Oryza sativa	13·29	6·44	0·64	78·86	0·77	0·007	0·149	—
	EDIBLE TUBERS :—										
23.	Aloo	Potato	Solanum tuberosum	74·73	1·73	0·13	22·80	0·61	0·004	0·034	—
24.	Bola or Pisika	—	Dioscorea bulbifera	65·22	4·73	0·12	27·40	1·33	0·013	0·109	1·20
25.	Budhia	—	Melothria heterophylla	66·52	0·68	0·36	29·96	0·86	0·019	0·043	1·62
26.	Chukandar	Beet root	Beta vulgaris	83·81	1·65	0·05	13·74	0·75	0·195	0·057	—
27.	Chumbia	—	Dioscorea Hamiltonii	66·65	1·78	0·17	28·94	0·98	0·052	0·049	1·46
28.	Chupri Aloo	Yam	Dioscorea alata var. globosa	79·58	1·27	0·07	17·82	0·82	0·021	0·041	0·44
29.	Edel	Tapioca	Manihot utilissima	69·84	1·38	0·26	26·10	0·98	0·045	0·033	1·44
30.	Gajar	Carrot	Daucus carota	86·00	0·92	0·07	10·75	1·08	0·082	0·030	0·18
31.	Goa mundakam	—	Dioscorea ala var. rubella	73·34	1·38	0·09	23·96	0·80	0·006	0·022	0·78
32.	Kapu sanga	—	Dioscorea sativa L.	67·77	3·34	0·17	26·43	1·27	0·014	0·094	1·02
33.	Kachu or arui	Colicasia	Colocasia antiquoram	73·05	2·95	0·10	22·18	1·72	0·038	0·143	—
34.	Lataru or Khamee aloo	Yam	Dioscorea alata	72·87	2·52	0·11	22·75	1·06	0·008	0·070	0·69
35.	Mooli (lal)	Radish (pink)	Raphonus sativus	90·76	0·61	0·32	7·46	0·85	0·046	0·017	—
36.	Mooli (ujla)	Radish (white)	Do.	94·41	0·70	0·06	4·25	0·58	0·54	0·025	—
37.	Moor sanga (dhak)	Tuber of Palas tree	Butea frondosa	45·43	2·10	0·25	50·01	0·62	0·025	0·021	1·59
38.	Sakarkand	Sweet potato	Ipomoea batatas	66·51	1·24	0·32	30·89	1·04	0·017	0·050	—
39.	Salukad pundi	Tubers of water lily (white)	Nymphea lotus var. lotus	62·45	3·11	0·30	31·71	1·30	0·065	0·217	1·13
40.	Salukad jenga	Tubers of water lily (red)	Nymphea lotus var. rubra	49·13	4·12	0·33	43·33	1·55	0·076	0·220	1·54
41.	Sang	Wild tubers	Dioscorea anguina	65·03	2·26	0·08	30·89	1·01	0·039	0·064	0·73
42.	Soothni	Do.	Dioscorea fasciculata	75·89	3·94	0·23	18·13	1·02	0·021	0·094	0·79
43.	Turum sanga	Do.	Curculigo orchioides	66·40	1·85	0·35	28·12	1·71	0·342	0·019	1·57

VII

SOVIET MEDICINE IN WARTIME*

A. KUKARKIN

This is what Nikolai Burdenko, the Chief Surgeon of the Red Army, hero of Socialist Labour, told us: if, in former times, the duties of army surgeons were conceived as being limited spheres of functions—operations, wound dressing and evacuation of injured—we are now faced with the additional problem of restoring the wounded men's fighting and labour capacity.

When the war broke out, Soviet medicine saw itself confronted with certain definite clearcut tasks, the principal among them being problems of epidemics, of food and of injuries caused by firearms.

In the past every war was accompanied by epidemic diseases: spotted abdominal and recurrent typhus, dysentery and cholera had always been regarded as inevitable concomitants of war. Suffice it to say that in the Russian army in the years between 1914 to 1918, according to incomplete data, there were over 300,000 men laid up with these infections and diseases.

Basing their calculations on a blitzkrieg with the Soviet Union, the Hitlerites had not efficiently provided their troops with anti-epidemic remedies. Among the numerous and varied trophies—armaments, tanks, lorries and other war material captured by the Red Army units, we rarely come across disinfection cameras or items of equipment for laundry station.

Our own line in anti-epidemic fight lay mainly along organization of large scale preventive measures both in the rear and in the army, and thoroughgoing, theoretically-grounded elaboration of problems relating to early diagnostics for ascertaining of bacilli carriers, et cetera.

Among our achievements may be considered the early diagnosis of diseases and diagnosis of abortive and concealed forms of diseases. The investigations begun before wars have enabled us to propose certain effective methods, in particular the so-called express diagnostics which is especially valuable in spotted typhus and grippe. The Germans destroy, on the temporarily occupied territory, whole villages—polluting the surviving houses and leaving the inhabitants without roof over their heads.

All this leads to the development of lousiness and spotted typhus, both among the invaders and the population. It has been our aim to protect our troops from these pestilences and their further action throughout the territory liberated from the enemy.

The labours of the Soviet scientists have improved the former complicated methods of obtaining vaccine used against spotted typhus. Use of tetravaccine has been made compulsory in our army. Its use in combination with antitetanus anatœin is especially to be noted.

The second problem solved by our scientists in these days of the national war covers the sphere of feeding and. particularly, the question of vitamins. It has meant strenuous effort indeed to acquire the method and technics of vitamin preparation and investigate into the sources of raw material. This task has been solved—thanks to the successes scored by Soviet biochemistry. The leaders of different schools—academician Bach, for example, Palladin, Sbarski and others showed the greatest energy in these researches. Suffice it to mention the extraction of carotine and utilisation of leaves of various plants (lucerne, beetleaf, etc.) and the extraction of vitamin C from pine needles.

This is all of great practical importance, preeminently in the matter of feeding the army units who are compelled to carry on their operations at considerable distances from supply bases. Of no less importance have these attainments been to the inhabitants, and particularly so in the complicated conditions of, say, the many millions besieged in Leningrad.

The treatment of trauma is the third and the most complicated problem which is being solved by our men of science in response to the demands of war and on the basis of Pirogov's conception—namely, that "war is a traumatic epidemic."

The investigation of this problem too is considerably facilitated by the labours of the Soviet scientists in the domain of federal physiological problems.

In the first place, theoretical conceptions are transferred into practice. The works of Orbeli, for example, have influenced the investigation of the cerebral œdema problem of pain and experiments for accelerating the process of nerve regeneration.

Its achievements in this department, which is affecting the percentage of men returned to ranks and lowering mortality, determine the system of organisation of medical services on the front and in the rear. Particular attention is devoted to concrete measures of combating shock, acute hæmorrhage and wound infection.

The organisation and the theoretical elaboration of questions of blood transfusion are the pride of Soviet medicine. The works of academicians Bogomoltez and Spassokukotsky, of professors Shamov, Yudin. Bagdasarov and many others—who have been stubbornly and methodically working on this problem are widely known. Thanks to this, our men are given blood transfusion in eleven per cent of all the cases of trauma. Moreover, injections are made of the plasma serum and of the so-called blood substitutes. The network of the institutions of restorative surgery has of late been widely extended. All these factors are contributing to the health of the population, to the health of the army imbued with vigorous spirit, to a remarkably small number of septic processes and to the rapid healing of wounds and the restoration of labour and fighting capacity. At present the number of the wounded soldiers who are being returned to the front in fit conditions has far exceeded 70 per cent.

*By courtesy of the Tass News Agency of the U.S.S.R.

III Bihar Provincial Medical Conference, 1943

Office: Tropical Pharmacy, Ranchi

The Third Bihar Provincial Medical Conference will be held at Ranchi on the 20th and 21st November, 1943.
A Scientific Section will be included in the programme. Those intending to read papers on scientific and professional subjects will kindly send the titles and summaries thereof to the Convener, Scientific Section, by the 15th November, 1943.
Delegates and visitors will kindly intimate the Jt. Secretaries for necessary arrangements of accommodation.

CASE NOTE

FOREIGN BODY IN THE LUNG

A CHAKRAVARTI, B.SC., M.B. (CAL.), F.R.C.P. (EDIN.), F.R.S.E.
Hony. Visiting Physician, North Suburban Hospital, Calcutta.

Govinda, aged 1½ years, had on 5-2-43 after returning from his usual evening round, dry cough off and on and at night sleep was disturbed. Did not relish his bottle at his last feed at night.

Daily Notes

6-2-43:—Morning temperature was 99°·4F., dry cough off and on, audible asthmatic wheeze and prolonged expiration. Attempted his milk in bottle but left it forthwith and since then would neither have his bottle nor anything, looking white as milk. Throat showed only congestion, no patch or ulcer. Nothing in the lungs. Took only fruit juices and water by spoon. The evening temp. was 100°·2, the cough was dry and brassy as of laryngitis. *Treatment*—Throat painted with modified Mandle's pigment. M. & B. 693, ¼ tab., ostocalcium ¼ tab., and an alkaline mixture, t. d. s., alternately.

7-2-43:—Temp. morning 99°·6 F, evening 101°·8 F. Almost same condition. Occasionally brought out blood-stained mucus along with vomitus after fits of cough. Voice was nasal. Throat swab showed usual bacteria, no B. diphtheria. *Treatment*—Same and adrenalin inhalant spray, steam atomiser with tincture benzoin co. and oil eucalytpi.

8-2-43:—Temp. morning 100°·2 F., evening 100°·8 F. A boggy swelling was found round the neck as a belt and also in the upper part of the chest in front and on palpation definite crackling was detected as of emphysema of surgical type (subcutaneous emphysema). *Treatment*—Locally, ichthyol-belladonna painted over the swelling and covered over by a thick poultice of Bi-phlogiston; other medicines same. Towards the evening the respiration was more hurried and cough more frequent. Bloodstained frothy mucus coughed out several times, specially after forced feedings. Vocal phonation was quite distinct, only nasal. There was a dull area over the lower two-thirds of the left lung, absolutely no air entry, no breath sounds.

9-2-43:—Temp. morning 99°·8 F., evening 102°·8 F. Condition same, occasionally a few crepitant rales over the upper third of the left lung. *Treatment* same. Throat swab sent for re-examination and culture. Examination report same as before. Medicines same. Injected Catarrhal mixed vaccine 0·1 c.c. plus 1 c.c. sol. Sod. Dagenan.

10-2-43:—Temp.morning 100°·4 F., evening 104°·4 F. Condition same. The swelling and emphysema much less. *Treatment*—same.

11-2-43:—Temp. morning 101°·2 F., evening 103°·4 F. Child more restless, fits of cough more frequent and at times there was dyspnœa. Inspite of negative bacteriological reports it was thought advisable to administer diphtheria antitoxic serum. which was done after desensitisation (the child had a prophylactic dose 6 months ago as there was a suspected case of diphtheria at home). 5,000 units of diphtheritic serum conc. was injected along with glucose sol. 12½ per cent 10 c.c. A powder containing atropine sulph. 1/600, ephedrine hydr. gr. 1/12 in honey, *plus* a spoonful of syrup Grimault's gave him great relief.

12-2-43:—Temp. morning 100°F., evening 102°·4 F. Cough less, no difficulty in breathing and no nasal tone in the voice. No rales over the upper part of the left lung. Stubbornly refused milk or anything in the bottle but took more of fruit juice and water. Emphysema practically gone. *Treatment* same.

13-2-43:—Temp. morning 98°·4 F., evening 100°· F. Cough less, no breathing trouble. Injected 5000 units of serum, ½ c.c. of Sodium Dagenan solution, and 1 c.c. Coll. Calcium with vitamin D. Other things as usual.

14-2-43:—Temp. morning 98°·8F., evening 100°·8 F. General condition better, other things same. No serum given.

15-2-43:—Temp. morning 100°·4 F., evening 102°·8 F. Cough less brassy; other things as before. Injected Catarrhal mixed vaccine 0·1 c.c., Calcibronat sol. 1 c.c. *plus* 1 c.c. of Sodium Dagenan. Developed nausea in the evening, stopped sulphonamides, only calcium, glucose and belladonna by mouth.

16-2-43:—Temp. morning 99°·8 F., evening 101°F. Condition almost same. Looked more exhausted. Had 10,000 units of serum and 1 c.c. of Collo. Calcium *plus* 10 c.c. sol. glucose 12½ per cent.

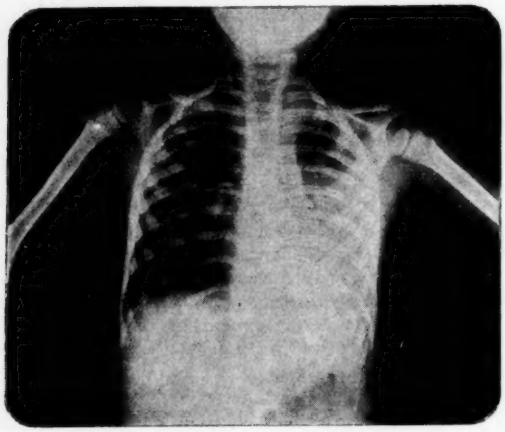
17-2-43:—Temp. morning 100°·2 F., evening 102°·2 F. Looked better early in the morning, but at noon started having crops of urticarial rash and eruptions and by the evening, the itching was intense and the whole body was swollen, the tongue and lips were also dry and swollen and the child tried to thrust his finger inside the throat, as if to remove something sticking there. I had to give him an injection of atropine 1/800 and solution adrenalin 0·1 c.c. (1 in 1,000), and the effect was prompt and the relief gave him sleep for 3 hours. Dry cough and itching woke him up for the rest of the night inspite of a linctus of ephedrine 1/12 gr., ostocalcium ¼ tab., chloretone gr. 1½, and syr. codeine phosph. 10 minims.

18-2-43:—Temp. morning 100°·2 F., evening 104°·2 F. Rash and œdema all over the body, tongue and lips dry and swollen, itching very distressing. Child looked very ill and an urgent relief was very much needed. I gave him 2 c.c. of auto-blood intramuscularly and the result was immediate and charming. Within 15 minutes the child had gone to sleep for hours. Towards evening the rash and swelling had gone down 80 per cent. Some itching and dry cough persisted throughout the night.

19-2-43:—Temp. morning 100°·2 F., evening 104°·2 F. Took some fruit juice and water early in the morning after several hours when he had only sips of warm water now and then. No more itching or any more wheals. Lung condition same but there was fine friction sound along a narrow belt just above the dull area. A blood count was done and W.B.C. count was 20,800 per c.mm., and poly. 86 per cent. Several times had long spells of cough and brought out blood with phlegm as also some deep chocolate-coloured threads and grains like disintegrated old blood clot. An abscess in the lung was suspected.

20-2-43:—Temp. morning 99°·4 F., evening 104° F. Fits of cough off and on and many times vomited out same type of phlegm. The pleuritic rub was clear and distinct. It was decided to get him x-rayed next morning. Was very restless at night, and chloretone grs. 2 in honey proved useless.

21-2-43:—Temp. morning 100°·4 F., 9 a.m. 102° F., evening 99°F. While being driven to the x-ray clinic the child started violent fits of cough and at the clinic in one of his fits suddenly brought out half a cupful of pus of greenish yellow colour with streaks of blood and with this came out several bits of foreign body, which were found to be one whole *labanga* (cloves) and some broken fragments of the same, some fine broken threads of the same also, as already referred to, looking like old blood clot disintegrated. Patient much relieved and at the clinic hao asked for a drink and took eagerly a cupful of orange juice, straight from the cup. He was x-rayed. On return home took his bottle (milk) for the first time after a fortnight. Cough was very much less and of bronchial type.



Teleradiography reveals the following:
1. *Hemithorax*—Both sides equal and normal. 2. *Trachea*—Not deviated. 3. *Mediastinum*—Appreciably drawn to the left. 4. *Cardiac position & size*—Slightly displaced to the left. Size not altered. 5. *Costophrenic angle*—*R*-Clear and sharp; *L*-Hazy and indistinct but sharp. 6. *Cardiophrenic angle*—*R*-Clear; *L*-Indefinite. 7. *Hilum*—*R*-Normal; *L*-probably normal. 8. *Broncho-vascular markings*—*R*-Normal; *L*-Not properly visualised. 9. *Pleura*—*R*-Not thickened; *L*-Does not appear to be thickened. 10. *Right Lung*—Normal. 11. *Left Lung*—Apex lights up unsatisfactorily, except a small infraclavicular area of the upper lobe, the rest of the lung field shows evidence of consolidation and loss of air entry. 12. *Conclusion*—Pneumonitis and partial consolidation of the left lung.

22-2-43:—Temp. morning 98°·8 F., evening 100°·5 F. Left lung showed pneumonic condition after resolution. Crepitant rales and rhonchi in both the lungs, more in the left. Cough less and bronchial.

23-2-43:—Temp. morning 98°·4 F., evening 99° F. Condition better all round. Injected 0·15 c.c. of Catarrhal (mixed) vaccine (B.I.) *plus* Collo. Cal. with Vit. D(B.I.). Took his nourishment well.

23-2-43:—Temp. morning 97°·4 F., evening 98°·4 F. Last night had several fits of cough and could not sleep well. Some œdema round the eyes was noticed. Urine showed no albumin. Later on some urticarial eruptions came out. Six hourly, two powders of ephedrine-calcium were sufficient to abort any further urticarial troubles.

From 24-2-43 the child was put on a mixture of iodine, thiocol, calcium and cod liver oil. He was having a good convalescence. The lung condition was improving.

15-3-43:—There was still some dullness over the left lung and some crepitant rales. No other adventitious sounds. General condition had improved remarkably.

Discussion

To start with, the possibility of diphtheritic ulcer in the larynx, not on the cords, was very strongly suspected, as also an influenzal attack with laryngitis. On the fourth day, bloodstained mucus and the subcutaneous emphysema were strongly supportive of an ulcer and a break of the tissue and air-entry aspirated during a violent fit of cough. The sudden appearance of a dull area in the left lung with practically no air entry suggested to me very strongly of a block of a branch of the bronchus by a foreign body; the same foreign body might have been responsible for the ulcer in the vocal chamber and then the surgical emphysema. Local infection would cause the fever very well. M. & B. 693 and sulphonamide in good doses, as also an injection of mixed catarrhal vaccine (0·1 c.c.) did nothing to ameliorate either the local condition or the fever. On the 7th day, when the child started getting dyspnœa it was no longer possible to withhold serum and after desensitising, anti-diphtheritic serum 5,000 units was administered. Next day the morning temperature was a degree less and another 5,000 units not only brought down the temperature but there was marked relief of all the troubles, less cough, no difficulty in breathing, and no nasal tone. On the 14th no serum was given and on the 15th when the morning temperature was higher, to cut down secondary infections a little catarrhal vaccine along with sol. Dagenan was given and the evening temperature went up to 102°·8 F. Next morning the temperature was again 100° and on that date 10,000 units of the serum was injected, but to no advantage at all. Instead, an additional trouble, the urticaria precipitated. The child again started having very high fever and more distressing cough also. When the leucocyte count showed high leucocytosis with poly. 86 per cent, lung abscess or an empyema was thought of, more the latter as the dull area never showed any typical signs of a pneumonic consolidation. The picture of two similar cases came to my mind [A child of 2 years swallowed a *küch* (used to measure a *rati* or ½ grain), which at last came out of an opening of her empyema 10 weeks after; the second case, also a child of 1½ years aspirating a silver ball, part of her mother's ring, coming out exactly as in this case under report, only the stimulating factor was a few whiffs of chloroform before the intended surgical operation]. An x-ray examination was decided upon and the plate indicated the position of the abscess and the congestive consolidation of the area beyond the block (*see* teleradiogram).

I must thank my friends and colleagues in the profession at Benares (where the case had been taken up) and specially Dr. S. Lahiri, the radiologist, for their kind help.

JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, NOVEMBER, 1943

TRAVANCORE FIGHTS QUACKERY

Practice of medicine by quacks is one of the serious evils with which the medical profession has to contend with and which we are trying to eradicate [1,2,3,4]. Apart from ignorance and superstition the low economic condition of our villages is the main cause of the great prevalance of quackery. Sarin[5] observed, "The evils of quackery have increased to such a great extent that some suitable action to prevent quackery and protect the public and the qualified doctors from its evil effect becomes absolutely necessary. Without legislation by the Government very little is possible. Any person who has picked up a little knowledge of medicine sets up in practice and puts up a board with the word 'Doctor' before his name and some letters corresponding to allopathic degree after his name. The Indian Medical Association has been requesting the Government to take some action but as yet nothing has been done."

Health of people should not be played with by irresponsible quacks. Quacks thrive on illiteracy and gullible public. Unfortunately, these people are in a majority here. In this country treatment of diseases is carried on by a motley crowd of physicians—allopaths, homœopaths, kavirajes etc., and Travancore is no exception. It is stated that next to Bengal, the Travancore State possesses the largest number of homœopathic practitioners and there are homœopathic institutions granting titles of all kinds by correspondence even. In South Travancore many hundreds of *Siddha Vaidyans* are practising. Except one qualified dentist there are plenty of unqualified persons practising as dentists in the State. There are six Ayurvedic grant-in-aid high schools and six recognised high schools, which are training candidates for the *Ayurveda Sastri* examination. None of these are up to the mark.

The Medical Committee, under the able chairmanship of Rao Bahadur Dr. T. S. Tirumurti investigated this thoroughly and submitted its conclusions to the State and its legislature. From now on, every medical student must have a premedical scientific course, a minimum period of training in a medical institution and in some cases one year's practical training before the candidate becomes a qualified physician. The Travancore Medical Practitioners Act[6], recently passed by the State legislature, will regulate the qualifications and provide for the registration of practitioners of various systems of medicine with a view to encourage the study and spread of such systems. To start with, the present qualified and unqualified practitioners will be registered in separate parts and practitioners of each system will have a separate register. The registration in separate registers will enable the Council to seek reciprocity in the Medical Councils of other places only for qualified practitioners. So far as ethics is concerned it is common to the practitioners of all systems. The Medical Council will have a majority of allopaths, who will be able to advise and guide the practitioners of other systems.

The Act provides for the prevention of all quacks in future. After the first year no new practitioner of any system can practise medicine unless he is qualified in a recognised institution. Any person found guilty of such offence will be punishable with a fine which may extend to Rs. 100/- for the first offence and Rs. 500/-for every subsequent offence. Conferring, granting or issuing colourable imitation of degrees, diplomas, licenses etc., is to be an offence punishable with fine which may extend to Rs. 1,000/-. Dentists are also included within the scope of the Act to prevent the necessity of passing a separate Dental Act. We understand that a similar Bill for the registration of nurses, midwives and *dais* will be presented at the next meeting of Legislature of the State.

In the rest of India, the Medical Acts do not prevent unqualified persons from practising medicine. So quacks continue to thrive and bogus medical institutions, degrees and diplomas are cropping up. We congratulate the Government of Travancore on the wise step they have taken to protect the health of the people. Travancore has given the lead. Will the rest of India follow?

GAS MASKS FOR EVERYBODY

Gas warfare developed during the closing scenes of World War I. The danger of gas poisoning is not only the immediate morbidity and mortality but the protracted affections of the eyes and lungs of the survivors. During the present time gas was used by Italy against Abyssinia and sporadic reports of its use by the enemy were seen in the press from China and Russia. No large scale gas warfare has been waged yet. But it does not mean that the enemy will not use it under desperate circumstances. Communications [1,2,3] describing the injuries and treatment of gas poisoning were published in this Journal, to educate the medical profession. At the beginning of the World War II, the Indian Medical Association, published a pamphlet[4]

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[1] DAS, BENARSI—Presidential Address, 7th U. P. Medical Conference. *J. Indian M. A.*, **10**:83, 1940.

[2] RAY, K. S.—Presidential Address, 17th All-India Medical Conference. *J. Indian M. A.*, **10**:195, 1941.

[3] *Idem*—Presidential Address, 18th All-India Medical Conference. *J. Indian M. A.*, **11**:135, 1942.

[4] GOULATA, R. C.—Presidential Adress, 11th Punjab Provincial Medical Conference. *J. Indian M. A.*, **11**:lxvi, 1942.

[5] SARIN, SURAJMAL—Presidential Address, 5th U. P. Medical Conference. *J. Indian M. A.*, **8**:183, 1938.

[6] The Travancore Medical Practitioners Act. Articles 37, 39. Published in a Supplement to Travancore Govt. Gazette No. 1, 17th August, 1943.

[1] NEOGY, B. P.—*J. Indian M. A.*, **9**:29, 1939.

[2] WAHED, A. K. M. ABDUL—*Ibid*, **9**:303, 1939.

[3] Editorial—*Ibid*, **8**:477, 1939.

[4] Treatment and Prevention of Poison Gas—Published by the Indian Medical Association, 1939.

to emphasise the dangers of poisonous gases used in warfare. Ray[5] has recently drawn attention to this important but neglected civil defence measure. Almost two years have passed since Japan entered this war and she is now occupying territories from which certain eastern zones of India, demarcated as 'red area' are threatened with fresh air attacks. In a broadcast from Delhi on Sunday, Sept. 26, Brigadier A. J. Reeve, Director (Technic) Civil Defence Branch, Defence Department, declared: "It is now 4 months since enemy bombs fell on Indian soil but it is not to be supposed that this state of affairs will continue in view of the continuous pounding which the British and American air forces are giving the Japanese in Burma. People in vulnerable parts of India must continue to be prepared for air raids and I am sure that the same spirit which distinguished the civil defenders in London, will be seen in the civil defence workers of India, should the necessity arise" (A.P.)

With the declaration of War, children, old persons and hospital patients were removed from threatened areas by the State in Great Britain. People were provided with surface and underground shelters and adequate arrangements made for treatment of the air raid casualties in the hospitals all over the country. Within a month every one of England's 50 million people was given a gas mask free. This showed efficiency and sympathy for the people, who, in their turn, felt safe. These were the reasons behind the splendid morale and *spirit*, about which we hear so much. Here in India, the basic groundwork for keeping the morale of the civil population is poor. We showed last month[6] that hospitals in some threatened areas, were lacking in the number of beds and personnel, if air attacks as apprehended by Brigadier Reeve occur. The problem of wartime air raid civilian deaths[7] discussed by us still remains unsolved. Moreover, after 2 years of war near the borders of India not a single gas mask has been distributed to the civil population. Mere platitudes over the raids, will not keep the morale of the people if the State neglects its duty for protection and safety of the people all over the threatened areas.

It falls on the medical profession to treat the injured and the gassed. From experience of gas warfare we realise more than anybody how gases creep silently and kill ruthlessly with horrible disfigurement of the human body. But this can be prevented. A gas mask will keep out all the known gases and save the lungs and eyes. In India, gas masks can be manufactured in thousands. Why not distribute gas masks free to all persons in the urban and industrial regions of the 'red area' to start with. If people feel that they will be cared for when injured, protected when gas warfare starts, and sheltered when bombs fall, we have every reason to believe that the spirit of blitzed Londoners will be seen here too.

[5] Ray, K. S.—*J. Indian M. A.*, **12**:319, 1943.
[6] Editorial—*J. Indian M. A.*, **13**:29, 1943.
[7] Editorial—*J. Indian M. A.*, **12**:192, 1943.

XX ALL-INDIA MEDICAL CONFERENCE AHMEDABAD

XX All-India Medical Conference will hold its Annual Session at Ahmedabad in the last week of December, the provisional dates being the 28th, 29th, and 30th December, 1943. It is proposed to hold in connection with the Conference the following:—

1. *Exhibition of Pharmaceutical Preparations, Surgical Instruments and Appliances, etc.:* Manufacturers of such preparations, instruments and appliances or their representatives are requested to take part in the Exhibition. Those interested in the preparation of indigenous drugs will also find a good deal of interest as there will be an exhibition of botanical plants collected from the Himalayas, Mount Aboo, Pawagadh and local fields.

2. *Scientific Section:* Those who propose to read papers are requested to forward them with three copies of typewritten abstracts, not exceeding 200 words each, to the Chairman of the Section not later than 30th November, 1943 for submission to the Scientific Committee.

Papers published or submitted for publication elsewhere will not be accepted.

In addition to the reading of papers it is proposed to have the following symposiums: Sulphonamide group of drugs in general practice. Acute Appendicites or Carbuncle. Treatment of Malaria when there is dearth of Quinine or/and Non-Occupational Lead Poisoning. Ectopic Gestation.

Lodging and Boarding arrangements: The Delegates will be accommodated with the members of the Ahmedabad Medical Society as their personal guests or, in a group, in a hostel; but those who desire hotel accommodation will have arrangements made for them in local hotels at the average charge of Rs. 10|- per day. As hotel accommodation is very limited, the rooms will have to be booked in advance and so members wishing the same are requested to send reservation charges of Rs. 20|- in advance.

Ahmedabad is rather cold in December and Delegates and Visitors are requested to bring their bedding, blankets and nets.

All enquiries may be kindly addressed to the Local Secretary, XX All-India Medical Conference, Surgical Hospital and Radium Institute, Ellisbridge, Ahmedabad-6.

CURRENT MEDICAL LITERATURE

MEDICINE

The Leukocytic Index*

Turley and McClellan (*Am. J. Clin. Path.*, Feb. 1943) believe that more serious consideration should be given to the lymphocytes in the circulating blood as evidences of the progress of disease and the resistance of the patient to disease. Similarly the number of polymorphonuclear leukocytes, they believe, indicates the lack of resistance, if the system reacts to the insult. Hence the leukocytic or lymphocytic index which is the ratio of the numbers of polymorphonuclear leukocytes and lymphocytes is a valuable indicator of the condition of the patient. The present eleven cases in which the neutrophilic-lymphocytic ratio was compared with the clinical course of infectious diseases: empyema, acute peritonitis, lobar pneumonia, acute appendicitis, cellulitis, acute osteomyelitis, and four cases of lung abscess. A high or rising leukocytic index in these cases was indication of low resistance and a prognosis the seriousness of which was in proportion with the height of the index. A low or falling leukocytic index showed a high or increasing resistance and a prognosis, the favourability of which was in proportion to the smallness of the index. They conclude that the leukocytic index is a reliable factor in prognosis of infectious diseases and is an aid in determining the optimal time for surgical procedures.

Gramicidin, Tyrothricin and Tyrocidine*

Robinson and Graessle (*J. Pharmacol. & Ext. Therap.*, Dec., 1942) write that there has been considerable experimental work done on the newer chemo-therapeutic drugs other than those of the sulfonamide group. Among them are gramicidin, tyrothricin and tyrocidine. The authors report both *in vitro* and *in vivo* studies of these chemical agents. Tyrocidine and tyrothricin appear to exert a marked bactericidal action on ærobic and anærobic gram-positive bacteria in the absence of blood or serum. Under similar conditions gramicidin appears to be primarily bacteriostatic. In the presence of blood or serum tyrocidine and tyrothricin lose their bactericidal properties whereas gramicidin retains its bacteriostatic properties. Under these conditions tyrothricin becomes primarily bacteriostatic, apparently by virtue of its gramicidin content. *In vivo* results indicated that when mice are infected and treated by intraperitoneal injection, gramicidin and tyrothricin are active whereas tyrocidine is not. Gramicidin or tyrothricin are only effective when given in direct contact with the infecting bacteria. Protection was not afforded to mice infected by intraperitoneal injection when treatment was given by oral, subcutaneous or intravenous administration. Likewise, mice infected by vein were not protected by intraperitoneal treatment.

Chronic Constrictive Pericarditis*

Harrison and White (*Ann. Int. Med.*, Nov. 1942) made follow-up studies of 37 cases of constrictive pericarditis. The ages ranged from 10 to 59 years. The average age of those operated on was 28·8 years and of those not operated on 45·5 years. There were 25 men and 12 women. As of August, 1942, 28 of the 37 patients have had pericardial resection. Fourteen of these 28 were clinically cured although in a few cases slight increase in venous pressure above the average normal remains, and one of the 14 died of other cause (pneumococcus pleurisy) one year postoperatively. Three others were much improved by the operation. Two died primarily of the disease itself, one of tuberculosis soon after the operation and one in congestion four months postoperatively. In five the death was related to the operation, 2 of the 5 succumbing on the day of the operation, one died one day postoperatively, one died of pulmonary embolism two days postoperatively, and one died of bronchopneumonia six days postoperatively. Four died of other complications: one of acute pancreatitis one month after the second operation, one of general sepsis one year postoperatively, one of bronchopneumonia two years postoperatively, and one of arterial embolism seven years postoperatively. Nine cases did not have pericardial resection. Three were so mild that operation was not thought necessary. Three were too sick to undergo operation. One died of miliary tuberculosis before the operation could be carried out. One died before this series of operations was started. One case has been lost sight of.

The Therapeutic Use of Artificially Produced Radioactive Substances*

Low-Beer and others (*Radiology*, Nov., 1942) report on the therapeutic evolution of radiophosphorus, radiostrontium and radioiodine with special reference to leukemia and allied diseases. The distribution and metabolism of radioactive phosphorus in human and animal tissues indicate, the authors believe, that it should prove valuable as a therapeutic agent for certain diseases, particularly chronic leukemia and polycythemia vera. The clinical reports show that it is too soon to compare the results of radiophosphorus treatments with other methods, and much too soon to compare the infrequent single dose method with the fractionated methods. In the treatment of chronic myelogenous leukemia, chronic lymphatic leukemia, and lymphosarcoma, some remarkable responses have been obtained and some unsatisfactory ones, with widely varying methods of dosage. Radioactive phosphorus in sodium acid phosphate has proved to be of great value in the treatment of chronic lymphatic and myelogenous leukemias, polycythemia vera and lymphosarcoma. Its use in the treatment of Hodgkin's disease is not yet established by experience. Its place in the treatment of multiple myeloma, metastatic carcinoma, and some other conditions is not well established, but the inevitably fatal outcome of these diseases justifies its experimental trial. The use of other radioactive elements (strontium, iodine, element 85, and phosphorus in chromium phosphate) is proving their value in some conditions. The possibility of using radioactive elements in various compounds which might localise in certain tissues is an unexplored territory with great potentialities.

Survival of Tubercle Bacilli in Books*

Smith (*Am. Rev. Tuberc.*, Nov., 1942) from experimental observations concluded that tubercle bacilli deposited in books and magazines were recoverable alive for from two weeks to

three and one-half months. In general, they lived about as long on paper as on glass. They lived as long on printed as on blank paper. One type of paper was definitely inhibitory to the bacilli. The period of recoverability was longer when the dose deposited was larger and during the winter season when average temperature and relative humidity were lowest. Occasional uncovered coughing into books is fairly common among sanatorium patients. Thumb-wetting occurs, but is infrequent. Books and magazines used by sputum-positive patients are possible sources of infection. They should not soon be read by non-tuberculous persons. Contaminated books ought, in most cases, be rendered safe and non-infectious by a quarantine period of one month.

SURGERY

Sulfonamide Compounds for Anthrax*

Gold (*Arch. Int. Med.*, Nov., 1942) has made since May, 1933 diagnoses and instituted treatment in 60 cases of external anthrax. In 51 of these, the patients were employees of the local mill, engaged in the manufacture of inner lining, the basic material for which was goat hair imported from China and India. In 21 cases treatment was with anti-anthrax serum. One death occurred. To secure recovery, large amounts of serum (200 to 2,000 c.c) were administered intravenously. In each case an optimum dose sufficient to control the œdema was required. Neoarsphenamine given in addition to serum was found to be of little or no benefit. In 42 cases of anthrax the patients were treated with sulfonamide compounds, with excellent results in 39 cases. In 1 case, the patient became worse after intensive treatment with sulfapyridine and its sodium salt, but he recovered after the injection of large doses of anti-anthrax serum and neoarsphenamine and immunotransfusions. In case 55 the patient failed to respond to adequate doses of sulfathiazole, but he recovered after the administration of serum. In the remaining case, sulfapyridine therapy was stopped too soon and anti-anthrax serum was given instead, with good results. Sulfapyridine was found to be the most effective sulfonamide compound; next came sulfathiazole, then sulfadiazine. However, because of the high incidence of nausea and vomiting encountered in the course of sulfapyridine therapy, Gold considers sulfathiazole the drug of choice at the present time. Large doses of sulfathiazole should be given until œdema is controlled. If a patient fails to respond after three days of treatment, anti-anthrax serum should be resorted to. Sulfonamide compounds, he concludes, are a safe and reliable substitute for anti-anthrax serum. These chemotherapeutic agents are easy to administer; their use materially shortens the period of hospitalization and disability, and they are economical.

Intraperitoneal Administration of Sulfadiazine*

Walter and others (*Surg. Gynec. & Obst.*, May, 1943) write that in order to determine the value of intraperitoneal administration of sulfadiazine, crystals of this substance were implanted in the peritoneal cavity and wounds of 68 patients operated on for various lesions, most of which resulted in peritoneal contamination. A similar study in which 62 patients were used was conducted with sulfanilamide. In the series studied they obtained an incidence of wound infection of 4·04 per cent with sulfadiazine and 14·05 per cent with sulfanilamide. Since there were more contaminated cases in the sulfadiazine series, it appears definite that, at least in their experience sulfadiazine was superior to sulfanilamide in the prevention of wound infection. However, in the sulfadiazine series there was 1 wound disruption, and 1 case of fatal peritonitis. They believe, however, that these 2 cases are coincidental, and doubt that they are related to the use of sulfadiazine. No toxicity of any kind was noted with the sulfadiazine, neither was there any evidence of delay in wound healing. They believe that the greater persistence of the blood level of sulfadiazine over sulfanilamide makes the former drug superior to the latter for implantation in the peritoneal cavity and wound following laparotomy, particularly when considering that the beneficial effect of the sulfonamide compounds is primarily bacteriotstatic and only slightly bactericidal. In their experience, the use of sulfonamides in wounds contaminated by resection of bowel has resulted in a much lower incidence of infection, sulfadiazine being superior to sulfanilamide. If sulfonamide action is desired for a few days following operation and intraperitoneal use of the drug, therapy must be resumed more rapidly with sulfanilamide (usually subcutaneously or intravenously in 0·5 to 0·9 per cent solution in physiologic saline solution) than with sulfadiazine. The common method of administering sulfadiazine under such circumstances is to give sodium sulfadiazine intravenously (*e.g.*, 3 grams twice daily).

Phage Therapy of Gas Gangrene†

The phages suitable for subcutaneous, intramuscular and intravenous injections whose production has been mastered by the Metchnikoff Institute at Moscow, are a valuable addition to surgical and serum therapy of anærobic infection of wounds. Phage therapy of gas infection of gunshot wounds is sidely applied by the military surgeons of the Red Army. Some of the phages are principally used against the common incitants of suppurative infection. In anærobic infections the phages are almost always employed simultaneously with sera or sera and blood transfusion or, additionally with sulfonamides. As to the phages themselves, these are employed in the form of local applications, subcutaneous injections away from the site of the lesion or intravenous injection of phage mixtures. Like other methods local irrigation of the wounds with phages may prove effective only after preliminary careful surgical treatment of the wound provided this is carried out during the first 6 hours after wound infliction. For subcutaneous injection, the phages are mostly diluted with physiological saline or some other isotonic liquid. The subcutaneous injections are made distantly from the affected area. By no means should injection of the phages be performed within the region of the affected tissues if gas gangrene has already developed. Infiltration of the already œdematous tissues with disturbed circulation will not favour the treatment of anærobic infection.

The question still remains open as to whether or not the phage might serve as a prophylactic means against the complications of wounds with anærobic infection. Such studies were carried out on a group of wounded at the request of acad. N. N. Burdenko at the Faculty Surgical Clinic of the First Moscow Medical Institute. It was found that the prophylactic action of the phage is not excluded on the condition that the

injected phage corresponds to the culture of the incitant. These preliminary conclusions complying with the data obtained on laboratory animals are to be confirmed on mass observations on patients with fresh gunshot wounds.

Treatment of Cornea Affections with Albucide†

At the suggestion of acad. M. I. Averbakh, the Helmholtz State Central Institute of Ophthalmology has begun already in 1941 testing the sodium salt of albucide (soluble albucide) in diverse affections of the external division of the organ of sight, *viz.*, in gonoblenorrhœa of newborn and adults, in blenorrhœa with inclusions, conjunctivitis, ulcerative blepharitis, creeping and other suppurative corneal ulcers, trachoma, traumatic inflammation of the cornea, and as a means of prophylaxis prior to operations involving section of the eye ball. Most of the observations were carried out on creeping and other kinds of suppurative ulcer of the cornea.

The methods of application of soluble albucide were developed while testing the preparation in the clinic (after preliminary experiments on animals). After numerous modifications the following method was devised. As soon as the patient is enlisted the ulcer, whatever its clinical picture, is dusted with soluble albucide every 3 hours during a whole day, *i.e.*, 8 times. Moreover, only mydriatic (scopolamine or atropine) or myotic (pilocarpine or eserine) medicines are prescribed—according to the clinical picture of the ulcer. No other medicines are applied during the course of treatment either locally or per os. The dosage is varied according to the indications suggested by every day examinations of the patient. If examination on the day following the initiation of treatment shows appreciable purification of the ulcer and epithelization of about one third of its initial area, the number of dustings (also with 3 hour intervals) is reduced to 5, from the morning to the evening. Thus the patient is not disturbed during the night (no more pains are commonly noted). Subsequently albucide dusting is continued until complete epithelization of the ulcer whereupon the powder is replaced by a 30% albucide solution (also 5 times a day, with 3 hour intervals). The last prescription is continued until the disappearance of the inflammatory phenomena, *i.e.*, complete recovery.

Soluble albucide is highly effective with regard to creeping and other suppurative ulcers of the cornea, it checks instantly the suppurative process and favours rapid epithelization. After the completion of the process there remains a mild opacity so that the acuity of vision is preserved on a high level and the appearance of the eye is but little changed. The effect of soluble albucide on the course of the creeping and suppurative corneal ulcers as recorded on fairly numerous patients suggests that this method is the most radical among the current methods of treatment. As the procedure is simple and local application never produces any by-effect whatever while the synthesis of the sodium salt of albucide is not complicated and the raw material accessible, there are all reasons for a wide scale production of the preparation and its inauguration into the ophthalmological practice.

OBSTETRICS AND GYNAECOLOGY

Foetal Tachycardia during Labour: A Fallible Sign of Foetal Distress*

Lund (*Am. J. Obst. & Gynec.*, April, 1943) reports that from careful observations of the fœtal heart rate throughout labor, rates in excess of 160 were found in 58 of 250 patients. In 44 of these labors the rate was transient; *i.e.*, persisted for less than 20 minutes. In 14 instances the rate persisted for periods longer than 20 minutes. Only two infants had rates exceeding 190 beats per minute and these for a very short time. Rates in excess of 160 during delivery were also uncommon: Seven infants only exhibited this finding.

There was no evidence that tachycardia indicated fœtal distress. There were but three asphyxiated infants and one stillbirth in the group studied and none could be associated with tachycardia. Fœtal movements were followed consistently by tachycardia, though not always to the level of 160 beats per minute. Uterine contractions, application of forceps, pressure on the fœtal head during rectal and vaginal examinations, and pressure of the fœtal head against the perineum were sometimes followed by tachycardia although bradycardia was the reaction more frequently observed.

Anoxia was not found to be the cause of tachycardia in the fœtus: this is in contrast to reactions usually observed in adult. From the results the author cannot subscribe to the notion that rapid fœtal heart rates are either common or hazardous. Dangerous and unjustified obstetric intervention has been largely responsible for the unfortunate results commonly erroneously attributed to fœtal tachycardia.

The Response of the Human Uterus to Epinephrine

Brown and Wilde (*Am. J. Obst. & Gynec.*, April, 1943) write that the human uterus can serve as a useful means of studying the action of certain drugs which have been studied on experimental animals: it is only by this means that we may avoid the pitfalls of directly transferring animal studies to the human being.

The action of adrenalin was studied on three types of human uteri: (*a*) laboring uteri with spontaneous rhythm, (*b*) puerperal uteri exhibiting spontaneous rhythm, (*c*) puerperal uteri with an oxytocially induced rhythm. Epinephrine causes a premature contraction of the uterus which is followed by a short latent period (compensatory pause) but without evidence of relaxation. Any apparent relaxation which follows epinephrine is always preceded by a period of increased activity. The authors find no evidence to support the use of epinephrine in disturbances of uterine contraction such as Bandl's ring, retraction rings, etc. Because of fatigue, dehydration, and shock, epinephrine is potentially dangerous in these patients and is not recommended.

Progesterone Therapy for Endometrial Hyperplasia*

Jones and Te Linde (*Bull. Johns Hopkins Hosp.*, Nov., 1942) in order to extend the knowledge of the endocrine background of functional uterine bleeding and thereby improve the possibilities for intelligent treatment employed progesterone in the treatment of 28 patients, only two of whom requiring radical procedures, one because of a failure of response and

another because of associated chronic pelvic inflammatory disease. This resulted in a reduction of incidence of hysterectomy and radiation therapy from 37 per cent in those above the age of 35 not subjected to progesterone therapy, to 7 per cent in this group. This, the authors say, clearly indicates the value of the therapy. For the successful use of progesterone in the treatment of endometrial hyperplasia the following facts are stressed: Progesterone is substitution therapy, and associated endocrine abnormalities which may be contributing factors in the disease must be investigated. The dosage and time interval of administration must be adequate. Progesterone is not useful in checking immediate hemorrhage. It is used for preventive purposes and must generally be continued cyclically over a period of at least four months. A recurrence of the disorder will not be prevented by progesterone. Hormone studies performed on a selected group of cases showed no pregnanediol in the urine before treatment and no excessive urinary gonadotropin. Estrogen values were within the normal range.

Absorption of Sulphonamides during Labor*

Speert (*Surg. Gynec. & Obst.*, Dec., 1942) points out that intrapartum infection frequently presents problems of management which are among the most difficult that the obstetrician is called upon to meet. For this reason accurate information concerning the absorption and effectiveness of sulfonamides before and during labour is particularly important. In an investigation of this subject the author gave three groups of women a single large dose of sulfanilamide, sulfathiazole and sulfadiazine respectively during labor. In contrast to the therapeutically effective blood levels ordinarily resulting from the administration of similar doses of these drugs, markedly impaired absorption, as indicated by extremely low blood concentrations, occurred during labor. This anomalous absorption during labor occurred rather uniformly among patients receiving sulfathiazole and sulfadiazine but was noted in only 4 of 16 patients to whom sulfanilamide had been given. When similar doses of sulfanilamide and sulfadiazine respectively were administered to the same patients during the puerperium, prompt absorption, with the establishment of effective blood concentrations, was observed. Sodium sulfathiazole and sodium sulfadiazine, injected intravenously during labor in similar doses, resulted in immediate high blood concentrations, which were maintained at therapeutically effective levels for at least 6 hours in the case of the former and considerably longer in the case of sodium sulfadiazine. It was concluded from this work that orally administered sulfonamides are poorly absorbed from the gastrointestinal tract during labor. When prompt chemotherapeutic action is required, therefore, during labor, these drugs should be given by parenteral injection.

Vitamin B_1 and Toxaemia of Pregnancy

Kapeller-Adler and Cartwright (*Edinburgh M. J.*, **50**:305, 1943) in reporting on the effect of the use of vitamin B_1 in 19 patients with mild or severe pre-eclamptic toxæmia observe that no beneficial effect was seen in any of these cases and that in the group of patients with severe pre-eclamptic toxæmia the effect of the vitamin B_1 treatment may even be described as detrimental (this is to be expected as vitamin B_1 has a definite affinity for histaminase). The authors maintain that the therapeutic use of vitamin B_1 in toxæmia of prenancy should be discouraged.

Vaginitis due to Entamoeba Histolytica

May (*Indian M. Gaz.*, **78**:250, 1943) reports an interesting case in an American girl of 24 of an ectopic lesion due to Ent. histolytica. The patient when brought in 1938 to the Rangoon Ramkrishna Mission Hospital complained of leucorrhœa for 3 weeks and excoriation of the vulva and neighbouring areas. She complained of no other symptoms. Menstruation was regular and symptomless. There were definite signs of vulvitis and vaginitis though the inflammatory reaction of the latter was quite mild. The rectal examination of the pelvic organs revealed a normal-sized uterus and no abnormality in size or tenderness of the adnexa. The smear examination of the material taken from the urethra and vagina indicated doubtful gonococcal infection. The patient having persisted in the assertion of her virginity a second examination of the material was done and cover slip preparation showed active Entamœba histolytica. The patient recovered completely under a course of emetine injection with very little local treatment. The patient did not give any history of dysentery. The mode of infection may only be surmised—the patient used to take her bath sitting in a tub-bath and infection may have occurred from this source.

Abstracts marked with an asterisk (*) were received through the courtesy of the United States Office of War Information, and those marked with a dagger (†) through that of U.S.S.R. Society for Cultural Relations with Foreign Countries, Moscow.

ANDHRA MEDICAL CONFERENCE, GUNTUR

The Second Andhra Medical Conference will be held under the auspices of the Andhra Provincial Branch, I.M.A., at Guntur on the 27th and 28th November, 1943. The Conference will offer facilities for exchange of views on medical matters and the whole-hearted co-operation of all members of the medical profession is solicited. Papers on scientific and professional subjects to the Scientific Section of the Conference are invited.

NOTES AND NEWS

INDIAN CHEMICAL MANUFACTURERS' ASSOCIATION

The Committee of the Indian Chemical Manufacturers' Association has issued the following:

The attention of the Committee of the Indian Chemical Manufacturers' Association has been drawn to certain reports and comments appearing in certain newspapers recently that Indian Manufacturers are taking advantage of the present scarcity of imported drugs and basing their prices on the market prices of imported equivalents rather than the cost of production The Committee of the Association have to point out that this is a mis-statement of facts. The price lists of any responsible Indian manufacturer will clearly reveal that as compared to the exorbitant rise in the price of other necessities of life, there has hardly been any significant increase in the price of most of the drugs and chemicals manufactured in this country and whenever there has been any increase it has been entirely due to the rise in the general cost of production and the abnormal rise in prices of the basic pharmaceutical chemicals which are mostly imported from abroad. It is a matter of regret that the manufacturers of drugs in this country are blamed without finding out the real facts and the real causes which have contributed to whatever increase in prices is evidenced.

MEDICAL PREPAREDNESS FOR CIVILIAN AIR-RAID CASUALTIES

Dr. Panchanan Chatterjee, President, Indian Medical Association, Bengal Provincial Branch, Dr. Bireswar Mitra, President, Indian Medical Association, Calcutta Branch, and Dr. Santiram Chatterjee, President, Calcutta Medical Club, have issued the following:

"Whereas Bengal has been declared a 'Red Area' (*vide* Notification dated 31-3-43) and it has been further declared that the A.R.P. measures are to be brought up to and maintained at its full strength (as per same Notification dated 31-3-43);

Whereas an A.R.P. scheme with provision of hospital beds for civil population has been brought to being and has been functioning since February, 1942, through the formation of a Liaison Committee, a body elected at a general meeting of the Medical Profession held on 27-12-41 at the instance of the then Hon'ble Minister-in-Charge, Public Health & Local Self Government, on the basis of agreed terms and conditions, and

Whereas the Bengal Provincial Branch of the Indian Medical Association prepared a skeleton scheme on Medical Aspects of Civil Defence in March, 1942, and a Memorandum on the same subject in August, 1942, and submitted these in due course, to the Government and the public through the medical and lay press, wherein the I.M.A. urged expansion and improvement of the Govt. scheme then existing; and because the menace of enemy air raid over Calcutta and different parts of Bengal appear to be in no way more remote than ever before, and

Whereas it has been the considered opinion of the fifth Bengal Provincial Medical Conference held in December, 1942, as embodied in their resolution no. 1 that the A.R.P. scheme as already formulated and operating (especially in relation to the number of hospital beds reserved for air raid casualties amongst the civil population of the city and suburbs) was inadequate and incomplete even when viewed in the light of Government's own professed ideas of reserving 6,000 beds for Calcutta only as assured by the then Minister-in-Charge and the Surgeon General in the meeting of the Medical Profession on 27-12-41; and

Whereas in view of the fact that the British Government at the very beginning of the war had arranged for one bed per every 200 persons of the population in the various A.R.P. Hospitals throughout England and Wales where they are steadily augmenting the number of beds as well as their hospital staff and equipments, and for that matter the Indian Medical Association had made a rather modest request to the Central and the Provincial Governments in India to provide for one bed for every 200 persons of the civil population in the A.R.P. Hospitals at least in Calcutta and other threatened urban areas at this stage of the war, and whereas the population of Calcutta has recently increased considerably,

The Indian Medical Association, Calcutta Branch, and the Calcutta Medical Club view with alarm the recent circular of the Government for "Reduction of A.R.P. Beds in Calcutta" by dictating one-sided terms to all non-Government Institutions apparently seeking to eliminate them from the scheme to which these non-Government Institutions had so far extended their whole-hearted co-operation inspite of non-fulfilment and dilatoriness on the part of the Government to supply them with necessary equipments, and also express their grave concern at the reduction of beds and medical personnel in the various A.R.P. Emergency Hospitals, both Government and non-Government, in the city of Calcutta; and further urge upon the Government not to be callous and sacrifice the security of the citizens on the altar of ill-advised economy but to be guided by the same principle of "Safety First" which leads them to retain I.M.S. men on the Civil Side in times of peace as War Reserve.

In conslusion, the Indian Medical Association and the Calcutta Medical Club consider it their duty to suggest that the Government should arrange for adequate medical protection in the threatened areas of the province of Bengal along the lines suggested in the I.M.A. Scheme, and provide at least 15,000 hospital beds for air-raid casualties with necessary personnel and equipments to meet the minimum requirements for the medical protection of the civilian population (at present estimated to be near about 30 lacs) of Calcutta—the second city of the British Empire."

INDIAN MEDICAL COUNCIL

The Executive Committee of the Medical Council of India at its recent meeting presided over by the President of the Council, Dr. Bidhan Chandra Roy, considered the question of providing further facilities to those medical practitioners, for example the Licentiates, who though registered with the Provincial Medical Councils yet desire to obtain qualifications recognised by the Indian Medical Council. The Committee recommended to the Council that during the present war and for a period of three years thereafter, the passing of the Senior Cambridge examination might be recognised as satisfying the Council's requirements regarding preliminary qualifications for

entrance to medical studies; provided that in the case of those who have held Commissions in His Majesty's Indian Land Forces, the Council's requirements regarding the Preliminary qualifications might be waived altogether. In order to obtain these recognised qualifications such practitioners would be required to pursue a further course of study at a Medical Institution for 24 months or 2 academic years.

Amongst other matters the Committee considered also the question of according permanent recognition to the M.B., B.S. degree granted by the Osmania and Mysore Universities with a view to establishing schemes of reciprocity with the Hyderabad State Medical Council and Mysore Medical Council.

THE USE OF FRESH MILK IN INFANT FEEDING

Now as a result of the war dried powders are becoming scarce and very expensive. It is desirable to conserve the stock of dried milk for use where fresh milk is unobtainable and for times of emergency. Parents are, therefore, being asked first of all that no infant should be weaned unless it is absolutely essential and, secondly, that if artificial feeding has to be given and if fresh milk is available, it should be used in preference to dried milks.

Immediately on receipt the milk must be boiled. After boiling it is important to get it rapidly cooled, and ice should be used for this purpose whenever possible. The milk should then be stored in a cool place and be kept at a low temperature. Where ice is not obtainable the hot milk should be poured into a cold jug, previously boiled and stored as recommended, standing in an earthenware dish full of cold boiled water, and a thin cloth soaked in cold boiled water should be placed over the jug dipping into the surrounding water. The dish containing the jug should be stood in a breeze so that cooling may take place by evaporation. When it is necessary to add water to the milk, the measured quantity of cold water previously boiled can be added at once to aid the cooling process. It is difficult to keep fresh milk good in really hot weather. Again a goat on the premises which could be milked when required might be the solution of this very real difficulty.

The first and most important rule to remember and act on is that an infant requires 2 to 2½ oz. of milk for each pound of body-weight every 24 hours. That is to say, a baby weighing 6 lb, needs 12 to 15 oz. of milk in 24 hours.

The second important rule to remember is that artificial food needs supplementing. The most important addition is vitamin C. The artificially fed baby should be given fruit juice from the age of 5 weeks. Orange, papaya and tomato juices are good. Begin with three teaspoonfuls and increase to 2 oz.

TABLE I—COW'S OR GOAT'S MILK

Age	*Weight of baby*	*Formula A*	*Formula B*	*Additions*		*Calories supplied in Formula A or B*
				Fruit juice	*Codliver oil*	
First 2 weeks.	6 lb	Milk 7 oz., Water 7 oz., cane sugar 5 level teaspoons. Divide into seven feeds of 2 oz. each.				240
Second 2 weeks.	7 lb	Milk 10 oz., water 8 oz., cane supar 6 level teaspoons or 1 oz. Divide into six feeds of 3 oz. each.			5 drops	320
Second month	8 lb	Milk 14 oz., water 7 oz., cane sugar 6 level teaspoons or 1 oz. Divide into six feeds of 3½ oz. each.		3 teaspoons	20 drops	400
Third month	10 lb	Milk 18 oz., water 6 oz., cane sugar 6 level teaspoons or 1 oz. Divided into six feeds of 4 oz. each.	Milk 16 oz., water 8 oz., cane sugar 8 level teaspoons or 1⅓ oz. Divided into six feeds of 4 oz. each.	6 teaspoons	40 drops	480
Fourth month	12 lb	Milk 24 oz., water 6 oz., cane sugar 6 level teaspoons or 1 oz. Divided into six feeds of 5 oz. each.	Milk 20 oz., water 10 oz., cane sugar 10 level teaspoons of 1⅔ oz. Divided into six feeds of 5 oz. each.	1 oz.	80 drops	600
Fifth month	13½ lb	Milk 30 oz., cane sugar 3 level teaspoons or ½ oz. Divide into six feeds of 5 oz. each.	Milk 25 oz., water 5 oz., cane sugar 6 level teaspoons or 1 oz. Divide into six feeds of 5 oz., each.	2 oz.	100 drops	660
Sixth month	15 lb	Milk 35 oz. Divide into five feeds of 7 oz. each.	Milk 30 oz., water 5 oz., cane sugar 5 level teaspoons or 5/6 oz. Divide into five feeds of 7 oz. each.	4 oz.	120 drops	700

Where the baby lives in the open air and gets plenty of sunlight the addition of vitamin D is not essential. Where sunlight is deficient it is very essential. Codliver oil or sharkliver oil can be given to supply this vitamin. They also supply vitamin A. Begin with 5 drops of codliver oil three times a day and increase to 1 teaspoonful at the third month and two teaspoonfuls during the day at the sixth month. Sharkliver oil may be either pure or diluted with groundnut oil. If pure oil is used half the quantity recommended for codliver oil is sufficient; otherwise the same quantity should be given. Artificial feeds may also be deficient in iron and it is well to begin giving additional solid foods earlier to the artificially fed than to the breast fed baby. Foods rich in iron are yolk of egg, green vegetables and dals. Boiled water should be given in addition between feeds, particularly in dry hot weather.

In Table I are given suitable tables for the feeding of an infant during the first six months of life. The quantities given are for 24 hours. If a frigidarie is available the whole quantity can be prepared and stored, otherwise half can be made in the morning and half in the afternoon. The sugar should be added just before the feed is due and before warming the mixture.

Fed on either of the mixtures A or B in Table I with the additions noted the baby will get a food sufficient in quantity and quality. The stronger mixture (A) is preferable and should be given if the child can digest it.

Buffalo milk may be used where cow or goat milk is not available. Buffalo milk is richer than cow's milk and greater dilution is therefore necessary. Suitable formulæ are given in Table II. Additions of sugar, vitamins and solids must be made as in the cow's milk formulæ and the same precautions to prevent contamination are essential. Water to drink between feeds is necessary.

Should the child find it difficult to digest the buffalo milk mixture a doctor must be consulted.

TABLE II—BUFFALO MILK MIXTURES

Age	*Weight*	*Formulae*	*Calories*
First 2 weeks	6 lb	Milk 5 oz., water 9 oz., sugar 5 level teaspoons.	250
Second 2 weeks	7 lb	Milk 7 oz., water 11 oz., sugar 5 level teaspoons.	310
Second month	8 lb	Milk 10 oz., water 10 oz., sugar 5 level teaspoons	400
Third month	10 lb	Milk 12 oz., water 15 oz., sugar 6 level teaspoons.	480
Fourth month	12 lb	Milk 15 oz., water 15 oz., sugar 7 level teaspoons.	590
Fifth month	13½ lb	Milk 19 oz., water 11 oz., sugar 4 levels teaspoons.	650
Sixth month	15 lb	Milk 21 oz., water 13 oz., sugar 3 level teaspoons.	690

These formulæ need not be followed rigidly, but are given as examples of how milk mixtures can be prepared to meet the needs of the baby.

It is strongly advised that the baby should be weighted every week. He should gain 6-8 oz. weekly and if he is so gaining the feeding is satisfactory. Stationary weight indicates under-feeding or failure to digest. It is a serious sign and should not be neglected.

From 6 months onwards additional feeds should be given in the shape of solids and the quantity of milk should not be increased. Towards 1 year of life if the child has learned to eat properly, the amount of milk taken can be gradually decreased from 2 pints to 1½ pints. During the second year one pint of milk should be sufficient.—*Abstracted from the recommendations of a Sub-Committee appointed by the I.R.F.A., May, 1942.*

THE USE OF SEDIMENT IN BLOOD PLASMA

The discovery that the red blood corpuscles, hitherto discarded as waste in the making of blood plasma, may be used to cure ulcers, infected wounds, and burns. The response to treatment is prompt. Pain disappears almost immediately. Purulent ooze subsides under the protective film. Granulation tissue rapidly develops. The red-cell solution has also proved to be a remarkable aid in the treatment of various types of anæmia. This is a great step forward in the utilization of blood for "banks" now considered indispensable for transfusion both on the battlefield and in civilian life.—*Science & Culture.*

BACTERIOSTATIC ACTION OF PENATIN

The discovery of a second and more potent weapon against disease germs is the mold Penicillium notatum, which has already yielded penicillin. The second substance from mold is called penatin. It is reported to be more powerful than penicillin and also active against disease germs which are hardly affected by penicillin. Of 50 disease-causing and non-disease causing organisms tested, none has been found which would resist the bacteriostatic action of penatin in dilutions of not less than one to 10,000,000. Penatin not only stops the growth of organisms but also, though to a lesser extent, can kill them. At dilutions of one to 12,500,000, in test tube experiments, penatin stopped the growth of diphtheria, anthrax, undulant fever, pneumonia, typhoid, para-typhoid, and pus germs, among others. —*Science & Culture.*

BOMBAY OBSTETRIC & GYNÆCOLOGICAL SOCIETY

The Joint Honorary Secretaries of the Bombay Obstetric and Gynæcological Society have announced the following additions and alterations in rules pertaining to the Dr. Herculano DeSa's Silver Jubilee Prize:

1. Whenever there is accumulation of prize money, more than one prize will be awarded in any subsequent year on the recommendation of the referees. 2. The Prize will be awarded henceforth every two years and the amount will be about Rs. 250|-. 3. It shall be open for competition to medical persons of not more than seven years standing and registered with the Bombay Medical Council. 4. Next Prize under the rule will be awarded for 1943-44.

UNQUALIFED MEDICAL PRACTITIONER CONVICTED

The Sub-Divisional Officer Mr. S. Krishen, I.C.S. has sentenced Hira Lal Gour of Sonepat under Section 6 of the Indian Medical Degrees Act and 23 of the Punjab Medical Registration Act and sentenced him to pay fines of Rs. 50/- and Rs. 75/- for two offences respectively. In default of payment of fine he was sentenced to undergo simple imprisonment for one month. The accused unlawfully styled himself as an L.M.S. and a registered medical practitioner.

OBITUARY

RAI BAHADUR DR. R. N. BANERJI, M.B.E., B.SC., M.B., B.S.

By the death of Rai Bahadur Dr. Rabindra Nath Banerji, Allahabad has lost an eminent physician and the medical profession one of its stoutest advocates.

Born in 1891, Dr. Banerji was the son of Babu Harimohan Banerji of the U. P. Judicial Service, and grandson on the mother's side of Babu Ramkali Mukerji, a famous lawyer of the Calcutta High Court. The great scholar lawyer, Dr. Satish Chandra Banerji, was his first cousin.

After his school and intermediate education at Ghazipur and Meerut where he won class prizes, Dr. Banerji joined the Muir Central College, Allahabad, and took his B.Sc. degree in 1911. The same year he joined the King George's Medical College, Lucknow, and obtained his Medical degree in 1916. He had a brilliant career at the Medical College, winning scholarships, medals and distinctions. He got the second position in order of merit in the Final M.B., B.S.

After a year or so of service as a Civil Assistant Surgeon in the province, he settled down and took up practice at Allahabad. Very soon he made his mark and came to be regarded as one of the keenest of medical men of the city.

In 1918 was founded the Allahabad Medical Association and Dr. Banerji was its first Hony. Secretary which office he held for several years. The Association remained ever dear to him and he was elected its President in 1939 and again in 1940 and 1941.

In 1942, he was elected President of the U. P. Branch of the Indian Medical Association and he held this office at the time of his death.

In 1928, the title of Rai Bahadur, and, in 1939, that of M.B.E., were conferred on him in recognition of his various public and medical services.

He was a fine sportsman. At the college he was captain of cricket and a member of the eleven in hockey and football. Later he exhibited his keenness for big game shooting and killed several tigers.

Very much to the regret of his vast circle of friends and well-wishers, Dr. Banerji got an attack of coronary thrombosis in 1940. He never recovered completely and for over three years he kept indifferent health. He died peacefully at the age of 53 years, on 19th August, 1943, at his residence 3, Club Road, Allahabad, leaving behind his widow, three sons and two daughters.

The following resolution of condolence was passed at a meeting of the Allahabad Medical Association held on the 24th August, 1943:

"The Allahabad Medical Association places on record its deep sense of sorrow at the premature death of Rai Bahadur Dr. R. N. Banerji, B.SC., M.B., B.S., M.B.E., who was one of the founders of this Association, its first Honorary Secretary and its President till recently, and was at the time of his death President of the U. P. Provincial Branch of the I.M.A. The Allahabad Medical Association offers its heartfelt sympathies to the members of the bereaved family."

NOTICE

The following resolution was passed by the XIX All-India Medical Conference held at Patna during the last Easter holidays:—

> "In order to stimulate intensive study and research on Puerperal Sepsis, the control of which is of vital importance to the nation, this Conference recommends to various medical institutions in the country to undertake detailed investigations of this disease in its different aspects, bacteriological and clinical, and to make available to the profession their findings in this respect. This Conference recommends to the Indian Medical Association to offer a medal or prize for the best paper on the subject to be read at the next session of the All-India Medical Conference."

Dr. K. S. Ray, an Ex-President of the Indian Medical Association, has offered a Gold Medal for the best paper on the subject to be read at the next session of the Conference to be held at Ahmedabad during the ensuing Christmas holidays.

The last date for receipt of papers will be notified later.

P. B. MUKERJI,
Hony. General Secretary,
Indian Medical Association.